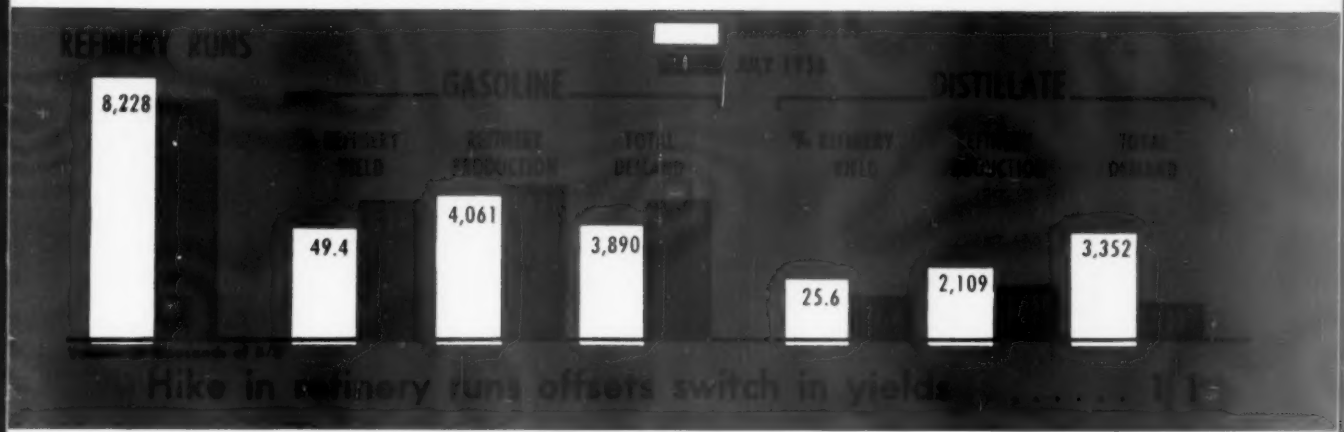
FEB. 6 1959

PETROLEUM WEEK

A McGRAW-HILL PUBLICATION



Hike in refinery runs offsets switch in yields 11

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Price 50 Cents

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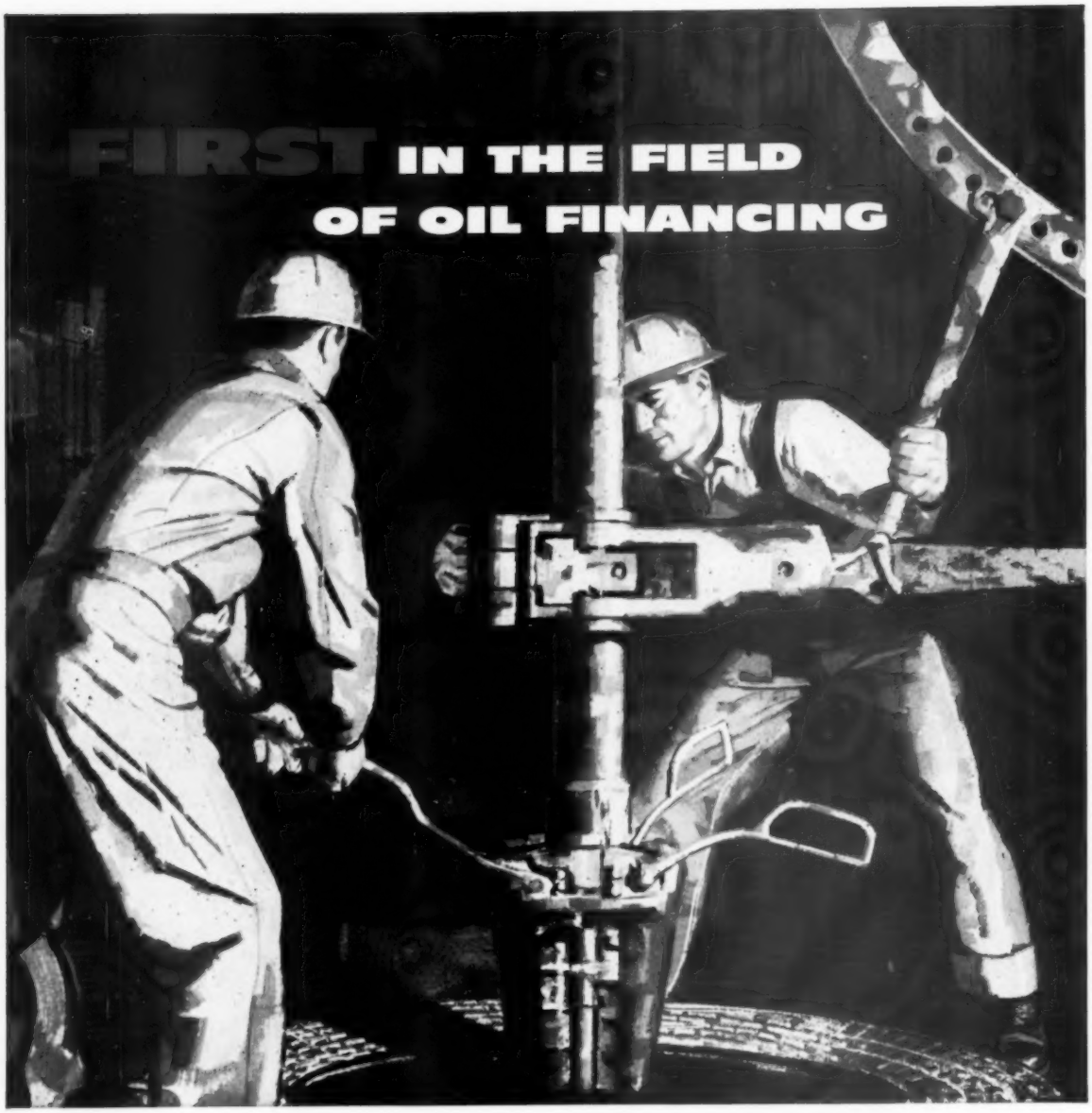

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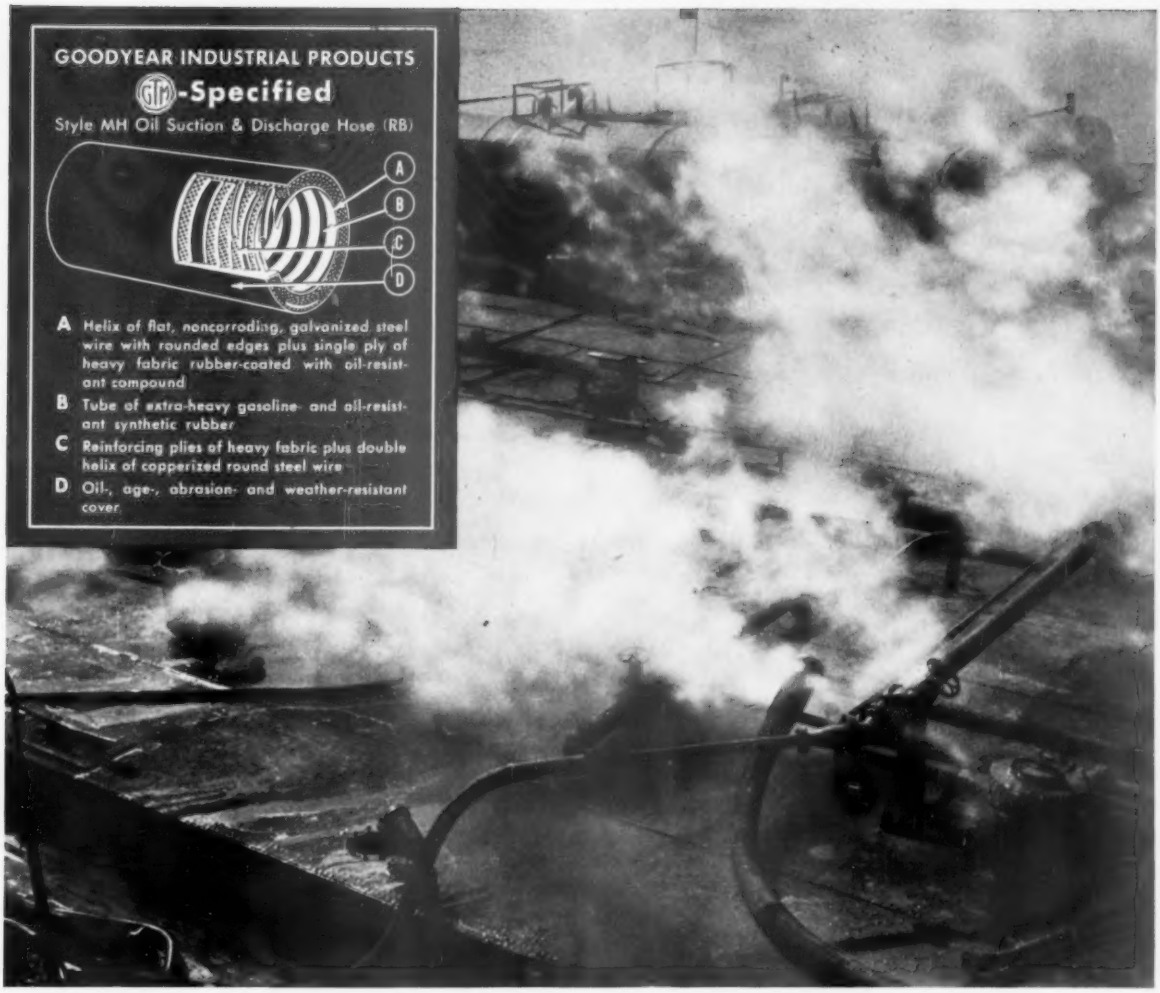

GOODYEAR INDUSTRIAL PRODUCTS
GTM-Specified
Style MH Oil Suction & Discharge Hose (RB)
A
B
C
D
A Helix of flat, noncorroding, galvanized steel wire with rounded edges plus single ply of heavy fabric rubber-coated with oil-resistant compound
B Tube of extra-heavy gasoline- and oil-resistant synthetic rubber
C Reinforcing plies of heavy fabric plus double helix of copperized round steel wire
D Oil-, age-, abrasion- and weather-resistant cover

12 years of punishing dock work—still asking for more

The tides at this major Southern port are big ones—dropping tankers and barges 13 to 15 feet just while unloading. That subjects hose lines to a lot of *severe* twist and torque. They're constantly dragged over the rough wood and concrete docks. And the throbbing action of high-gallonage pumping adds still more abuse.

But the G.T.M.—Goodyear Technical Man—knew he had the answer to this rugged service in Style MH Suction and Discharge Hose. It's muscled with a rugged double helix of heavy steel wire for top resistance to crushing and kinking. Its super-tough cover shrugs off the most severe abrasion—is oil-, age- and weather-resisting, too.

How did it work? The G.T.M.'s hose *has taken 12 straight years of punishment—is still going strong.* In that time, it's handled gasoline, refined oil, propane, butane and crude oil. And the customer, impressed by its quality, has also ordered Goodyear steam hose for the barge-cleaning operation shown above.

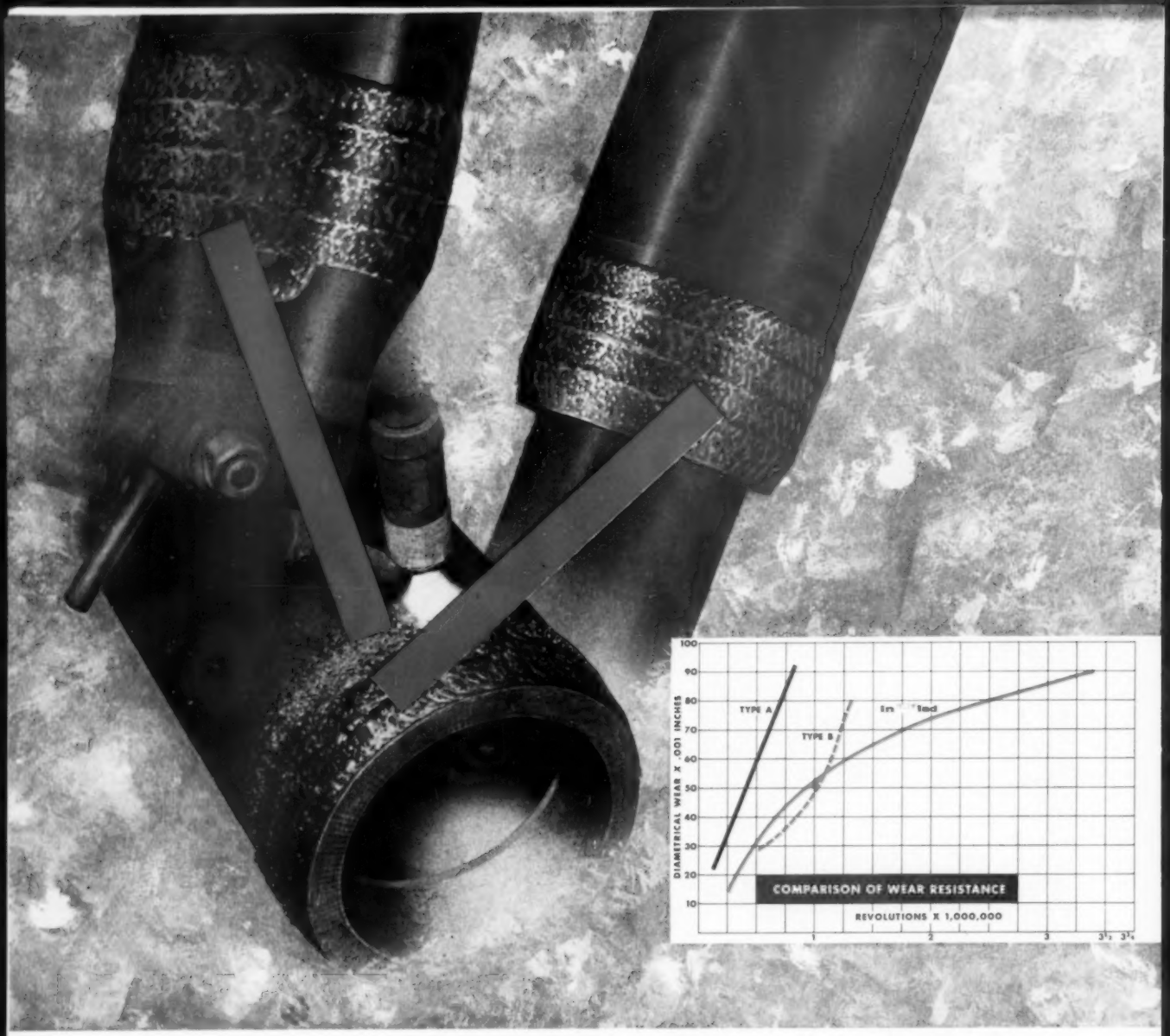
Better, longer-lasting hose for *your* dock? There are over 800 types in the complete Goodyear line. For details on any one of them, contact the G.T.M. through your Goodyear Distributor—or write Goodyear, Industrial Products Division, Akron 16, Ohio.

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service in Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

STYLE MH OIL SUCTION AND DISCHARGE HOSE BY

GOODYEAR

THE GREATEST NAME IN RUBBER



In the laboratory, as the chart above shows, exhaustive tests have proven Inarclad hard metal wears more than twice as long as other hard metal applications.

Inarclad

Reed's advanced hard metal application for tool joints

three years field proven . . . there is nothing newer!

Over 3,500,000 feet of drill string equipped with Reed Tool Joints Inarclad Hard Metal in the field three years —plus exhaustive laboratory tests—prove Inarclad's superiority. Inarclad, an inert arc hard metal application for tool joints, was perfected and introduced in 1955 by Reed. There is no newer hard metal application for tool joints available. Reed Inarclad outperforms all other types of hard metal bands under the most severe abrasive conditions.

DISTINCT ADVANTAGES OF INARCLAD

1. *Inarclad uses the high-alloy steel of the tool joint itself as the binder for the hard metal.*
2. *The weld is made by an automatic machine which virtually eliminates human errors. Superior weld quality!*
3. *The steel of the tool joint will not become oxidized by the heat of the weld because the arc is operating in an inert atmosphere.*
4. *Uniform amounts of hard metal are put into each band. More hard metal!*
5. *The hard metal is applied to the tool joint without recessing and results in a slight surface build up. This build up equals approximately 1/32 of an inch, which increases the tool joint O.D. about 1/16 of an inch. The O.D. of the tool joint remaining after all the hard metal has worn away is 1/16 of an inch larger than it would be if the same bands had been laid in recesses.*

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A McGRAW-HILL PUBLICATION

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INSIDE *Slant*

CPA OFF ON RIGHT FOOT

The Committee on Public Affairs of API has launched a personalized advertising program that should prove most effective.

It's a different approach from that employed by the old Oil Information Committee, which centered most of its attention on the national audience.

The CPA approach not only is personalized but is directed at specific groups.

In fact, presently it is directed toward three groups—jobbers, dealers, and the general trade.

The statistics and material in each ad are directed toward the group that CPA is trying to read.

For example, an ad in a recent issue of the Texas Service Station was pitched around the gasoline tax.

The main point:

"Your biggest competitor—

"The gasoline tax—

"Is Ready to Strike again."

To support this point, statistics were presented to show:

The consumer today pays 41% of the retail price of every gallon of gasoline in taxes.

Tomorrow, if planned raises go into effect, taxes will be equal to 50%.

LeRoy Menzing
EDITOR

Congrats and $25 for this quip to Mrs. Merlyn Goodman, Rt. 5, Box 742, Shreveport, La.

Looking into the future . . a major oil company engineer predicted 50,000 ft. wells by 1975. The world demand for oil and gas, with deeper wells, will mean a constantly increasing pipe production schedule by Lone Star Steel.
Joe Roughneck, heart of the oil and gas industry, knows he can depend upon Lone Star as a convenient source of supply for top quality API casing, tubing and line pipe.

Neighbor, wherever you are, specify Lone Star and we both get a good deal.

© 1956 Lone Star Steel Company

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Houston, Texas | Midland, Texas | Tulsa, Oklahoma

DEPT/Opinions

Views That

"If current crude prices are to remain relatively fixed over the next several years, then oil-finding and oil-developing costs must be reduced or we are in semi-liquidation."

—LEONARD R. SEAMAN
President
Intex Oil Co.

". . . It appears fairly certain that, for the next five years at least, the oil industry will operate on profit margins that are too thin."

—FRANK O. PRIOR
Chairman
Standard Oil Co. (Ind.)

"The [Texas] governor's opposition to further federal gasoline taxes is commendable. However, since he called the Legislature's attention to the possibility of raising the state gasoline tax another cent, it should be pointed out that such an increase would raise the total state and federal sales tax on gasoline to 43% of the value of the fuel itself.

"If Congress also raises the federal tax 1½¢, as the President advocates, the average Texas motorist will then be paying a flat 50% sales tax on one of the primary necessities of life."

—CHARLES W. ALCORN
President
Texas Mid-Continent Oil & Gas Assn.

"United, we independents [independent oil unions] have a chance to survive. Divided, we are like ducks on the pond, and at the mercy of management.

"Therefore, we hope that in 1959 many of the independent oil and allied unions will join the FIOU [Federation of Independent Oil Unions] to help weld it into the effective federation it can be. . ."

—R. R. DAWSON
President
Baytown Employees Federation

"One hears quite often the view expressed that the large fields have already been found and that all we can find today are small fields with thin sands. . .

"Those familiar with exploration are aware, of course, that this supposition is not true.

"The fact is that the industry is continuing to find fields with substantial reserves at about the same rate as in former years.

"The significance of this situation from the standpoint of future oil dis-

Make News . . .

coveries is that the increasing number of small fields has been **in addition to,** rather than **in lieu of,** large fields."

—MORGAN J. DAVIS
President
Humble Oil & Refining Co.

"Our life is frittered away by detail . . . Simplify, simplify."

—HENRY DAVID THOREAU
"Walden" (1854)

. . . and Letters

Dear Sir:

I have been a reader of your publication since its inception, and it is also furnished not only to our sales force, but to others in the office to keep informed on what is happening in our business. We enjoy reading it and look forward to it each week.

In "Many Proposals Affect Oil Marketing" [PW—Jan.16'59,p59], you show that Alabama is due for a gasoline tax increase. . .

I don't know where you secured your information on the gasoline tax increase, but our governor in a recent speech to the State Chamber of Commerce made the statement that we would need to float a $50-million to $60-million bond issue, but that the last gasoline tax increase of 1¢ per gal. passed in 1955 was sufficient to take care of this if it were used on major projects. The lieutenant governor appeared before the Alabama Oil Men's Assn. and made the same statement. . .

We certainly aren't expecting anyone in the government to propose any additional gasoline tax during the next four years . . .

J. C. BARRY
Alabama div. mgr.
Standard Oil Co. (Ky.)

• *Editor's note: At the time the survey we used was taken, a choice had not been made between a tax or a bond issue. We're glad it was the latter.*

PETROLEUM WEEK *will publish reader comments each week. Address letters to LeRoy Menzing, Editor,* PETROLEUM WEEK, *330 W. 42nd St., New York 36, N. Y.*

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OIL AND GAS
INDUSTRY

Lone Star Steel men are specialists . . true craftsmen. Lone Star is not just a steel plant *per se* . . but an organization of craftsmen specializing in fine pipe for the great and growing oil and gas industry.

At Lone Star . . with the finest tools and equipment . . steel craftsmen make API casing, tubing, and line pipe to a precise quality level that is well known.

Lone Star pipe is the gem of the oil and gas industry.

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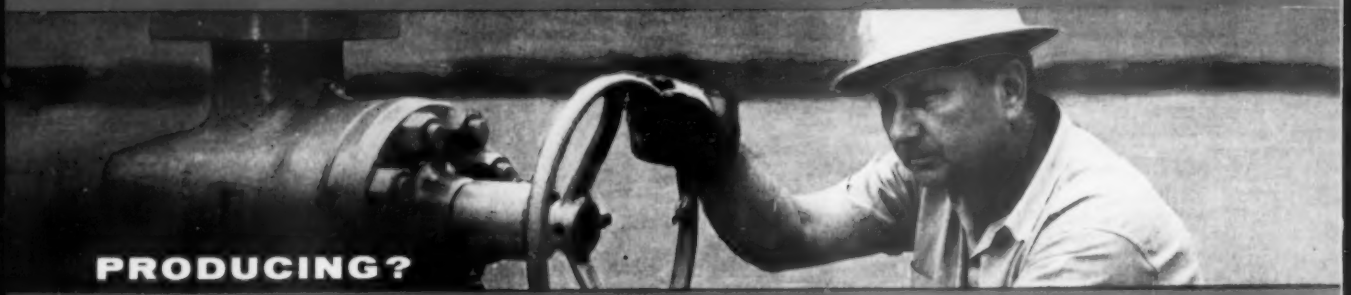
DRILLING?

The first successful blowout preventer was built by Cameron in 1922 — today we make the widest range of sizes and ratings in the most advanced pressure controls for drilling.



PRODUCING?

There is a Cameron Christmas Tree for every well — shallow or deep — high pressure or low — single, dual, triple, or quadruple completion.

LOOKING FOR PRESSURE? . . AND

PROFITS?

Don't forget, if you are looking for oil or gas, you are looking for pressure — preferably high pressure. But pressure must be kept in place for safety and profits.

WRITE

CALL . . . .

OR COME BY

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60-Second Summary / WHAT'S HAPPENING IN OIL

February 6, 1959

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Late gains brightened oil's 1958 earnings picture, which had looked black at midyear. And rising demand and prices should keep profits going up this year. . . . p. 14

•

Discounts to Japanese buyers of Arabian crude threaten Middle East price postings, oil men say. And a cut in postings would have an impact in all producing areas. . . . p. 16

•

This is the obituary of a champion. The Phillips No. 1-EE University, the world's drilling-depth record holder (25,340 ft.) is dead. Phillips, after a final test for "life" in the Wolfcamp section, decided further operations would be useless. . . . p. 15

•

Refining economics and plant design will keep gasoline yields relatively high, despite heavy drafts on distillate stocks. And with runs high to make heating oils, gasoline inventories will mount until early spring. . . . p. 11

•

Canadian pipeliners appear confident Alberta gas will win big U. S. markets. At any rate, they are proceeding with aggressive plans. . . . p. 44

•

Continued discoveries make the McAlester-Arkansas River Basin look good. Gas has been the principal find, but there's still some oil hope, too. . . . p. 21

•

Neoprene may get into the road-building act. Tests have shown that this "old" rubber may be well suited for use in rubber-modified asphalt. Its backers say it increases road life, reduces maintenance. But there are skeptics. . . . p. 36

•

Mexico's Pemex is trying to chop the deadwood out of its organization. It figures it can trim its payroll 20% and achieve more efficiency at the same time. . . . p. 48

•

How do you pick a station lessee? Suppliers make use of several yardsticks, including the attitude of the would-be dealer's wife. . . . p. 56

•

Michigan's crude production, long in a decline, may start climbing soon. Watch the oil play in the state's southern and southeastern sections. . . . p. 23

•

Venezuela is planning to follow its oil tax hike with new, tighter field rules. These, if put into force, would mean higher operating costs, more restrictions on well spacing, rates of production, etc., and more red tape. . . . p. 14

Up to the Minute / SIGNIFICANT LATE NEWS

AT-A-GLANCE PETROLEUM WEEK Copyright

February 6, 1959

Arthur T. Proudfit may replace H. W. Haight as president of Creole. There was knowledgeable speculation this week that this assignments switch is in the works: Proudfit, a Jersey Standard director, would resume the presidency of Creole, which he had held until 1954; Haight, who voiced strong objections to Venezuela's oil tax hike, would move to another Jersey subsidiary, possibly in the U. S.

•

Dr. Juan Perez Alfonso is likely to be the new oil minister of Venezuela when the Betancourt government takes office Feb. 18. He held the same post in the previous Betancourt regime (1945-48). Like Betancourt, he opposes further oil concessions, and favors "conserving" Venezuelan oil production.

•

Gulf Oil this week was the lone major purchaser that hadn't reduced Permian Basin crude postings. At mid-week, Humble Oil & Refining met the 7¢-a-bbl. cut for all grades in the area (page 15).

But Gulf, with its Port Arthur (Tex.) refinery closed by strike, is trimming its crude take. It is buying only one-third of its normal purchases in West Texas, southeastern New Mexico, and Alabama. It has been buying 147,000 b/d of sour and 43,000 b/d of Ellenburger in the Permian basin and 12,500 b/d of Alabama (Citronelle) crude. Shell, hit by a strike at Wood River, Ill., hasn't announced any plans to prorate its crude take.

•

A 40-acre vs. an 80-acre well-spacing pattern will be given a field test in Utah. Shell has been granted permission to drill five wells with 40-acre spacing—under certain restrictions—with the results to be used by the state's Oil & Gas Conservation Commission in deciding whether to switch from 80 to 40. If Shell doesn't prove its point, the wells will be plugged.

•

The Defense Dept. is still opposing oil exploration on San Nicolas Island, off the California coast. It says military needs preclude commercial activities or use of the island as a Naval petroleum reserve, as has been proposed.

•

A shipment of residual oil from behind the Iron Curtain to the U. S. is creating a stir. Some domestic producers, coal spokesmen, and congressmen are criticizing the plan of Commerce Oil Corp., of Warren, Pa., to bring in a tanker of residual this month (PW—Jan.30'59,p46). They fear it will be the entering wedge of a Soviet drive to dominate the American fuel market and damage domestic oil and coal industries.

The importing firm says it is simply obtaining hard-to-get low-sulfur resid to blend with higher-sulfur resid. The Rumanian product is said to contain less than one-half of 1% sulfur, whereas Gulf Coast resids up to a maximum of 1% sulfur content draw a 25¢ per bbl. premium. Middle East, West Texas sour, and California crudes yield resids well in excess of this amount.

BUYING GUM INHIBITORS?

Eastman bulk handling system can cut your gasoline-treating costs

BULK shipment means savings.

In the case of Tenamene 2—six cents per pound.

Applied to a 28,000 pound tank truck, this adds up to $1,680. On a 36,000 pound tank car, $2,160.

By buying Tenamene gum inhibitors in bulk, you eliminate drum handling and storage costs, too.

Still another advantage is that the 3-compartment tank truck permits you to receive as many as three different Tenamene additives in one shipment with bulk prices applying to each one.

Eastman's bulk handling service is practical primarily for refiners whose inhibitor requirements justify modification or replacement of existing drum handling and storage facilities.

To help you evaluate the economics of Eastman's bulk handling system in your operation, we have prepared a comprehensive and detailed description of the fittings, transfer lines, storage installations and procedures required.

This on-the-spot engineering assistance on planning a bulk handling installation plus technical advice on the proper and economical use of Tenamene additives is available from our local representative. Write or call any of the sales offices listed below, or contact EASTMAN CHEMICAL PRODUCTS, INC., subsidiary of Eastman Kodak Company, KINGSPORT, TENNESSEE.

Tenamene

EASTMAN GASOLINE ADDITIVES

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tenn.; Atlanta, Ga.; Chicago; Cincinnati; Cleveland; Framingham, Mass.; Greensboro, N.C.; Houston; New York City, St. Louis. **West Coast: Wilson Meyer Co.,** San Francisco; Denver; Los Angeles; Phoenix, Portland; Salt Lake City; Seattle.

Gasoline Plant . . .

Built With An Eye To The Future!

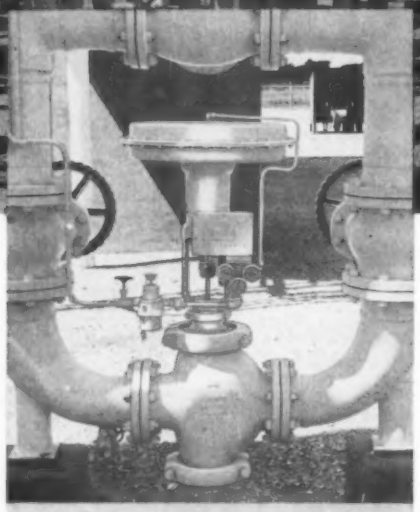
This modern absorption-type gasoline plant*, like most modern plants of today, was built with an eye to the future . . . with later expansion in mind.

Currently stripping 100 MMSCF of natural gas per day of propane, iso-butane, normal butane and natural gasoline, it can be quickly and inexpensively expanded to handle an additional 50% of its present capacity.

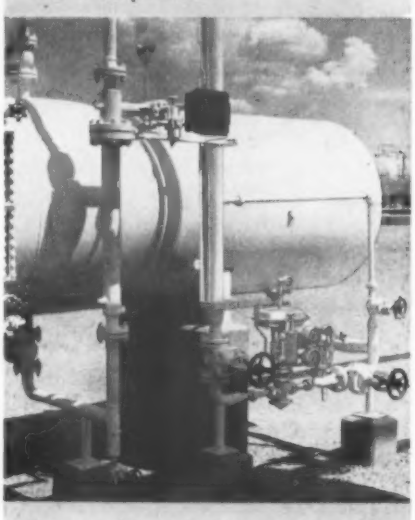
One very important reason for this plant flexibility was the incorporation in its design of wide range and capacity controls, such as BS&B Super 70 Control Valves, Liquid Level Controls and Regulators.

BS&B Controls are everywhere proving themselves in many different oilfield and other applications the world over. Why not specify them on your next job!

* Name and location supplied on request.



This 6", 150 lb. Super 70 serves as an accumulator pressure control valve. It is equipped with a direct acting actuator and valve positioner.



Butane splitter reboiler equipped with a BS&B Type 71-06 Series 2 Liquid Level Controller with automatic reset relay and a 1" Super 70 valve.

SUPER BS&B 70

BLACK, SIVALLS & BRYSON, INC.

Controls Division, Dept. 4-EU2

7500 East 12th Street Kansas City 26, Missouri

Why Do Gasoline Yields Stay High?

The narrowing gap between heating oil and gasoline prices is causing refiners to raise distillate output. But most of the increase results from higher crude runs rather than shifts in product yields.

The "spread" in prices between the two products, as measured in the Gulf Coast cargo market, is now the smallest in years, 7/8¢ per gal.

That's based on the Platt's Oilgram low of 9⅞¢ a gal. for No. 2 heating oil and 10¾¢ a gal. for the highest-octane (93) regular-grade gasoline.

The relationship of the price of heating oil—the largest volume distillate—to the price of gasoline has an important bearing on what refiners can do to switch to a higher yield of distillate (and a corresponding lower yield of gasoline) to meet peak demand in the winter.

Demand for distillate, which has been strong since early fall, is now running at a record of about 3.4-million b/d, a rate that many industry observers say calls for a much higher distillate yield than at present.

The indicated demand for distillate in January (table, below) was 4.1% above January, 1957, when, due to the Suez Canal closing, export demand for heating oil to supply Europe was high.

Preliminary demand data for the full month of January will be found on page 53.

Current estimates are that demand for distillate during the remainder of the heating season will continue to be up sharply higher than a year ago.

And a continuation of the present trend of demand will cut sharply into distillate stocks, which now are at the lowest level for this time of year since 1956, when demand was 25% less than now.

Without an increase in the percentage yield, the stepped-up runs to

Gasoline Output High, Despite Yield Switch

Volume in thousands of B/D

Month	Total Refinery Runs	GASOLINE			KEROSINE			DISTILLATE		
		Percent Yield	Ref. Production	Total Demand	Percent Yield	Ref. Production	Total Demand	Percent Yield	Ref. Production	Total Demand
1958										
January	7,672	50.1%	3,847	3,527	4.7%	361	565	24.0%	1,841	2,742
February	7,524	50.4	3,789	3,487	5.0	380	594	22.9	1,721	2,975
March	7,357	49.5	3,640	3,564	4.6	337	357	22.4	1,650	2,094
April	7,189	49.9	3,589	4,021	3.8	270	203	21.8	1,568	1,559
May	7,411	50.1	3,713	4,106	3.1	227	143	22.1	1,636	1,253
June	7,527	51.7	3,896	4,251	3.1	233	143	21.4	1,611	1,115
July	7,554	53.9	4,071	4,300	3.0	225	180	21.8	1,650	1,231
August	7,824	52.7	4,123	4,273	3.4	265	172	21.8	1,706	1,108
September	7,762	51.5	4,001	4,097	3.7	285	202	23.0	1,784	1,321
October	7,700	50.9	3,921	4,118	4.1	315	299	23.6	1,818	1,510
November	7,777	51.8	4,028	3,892	4.3	335	361	23.5	1,826	2,079
December	7,956	51.9	4,133	3,810	4.7	377	558	24.9	1,982	3,096
1959										
January 9	8,245	49.7	4,098	3,712	5.4	443	547	25.2	2,076	3,115
January 16	8,129	50.0	4,070	4,086	5.7	462	771	25.9	2,107	3,496
January 23	8,311	48.3	4,014	3,872	4.2	352	621	25.8	2,144	3,446
January Average to Date	8,228	49.4	4,061	3,890	5.1	419	646	25.6	2,109	3,352

make distillate could lead to unnecessary high stocks of gasoline.

Some economists have been urging higher yields of distillate since last fall. But since that time, the yield of distillate has been increased only one percentage point nationwide, to the present 25.6%.

And since fall, the refinery throughput rate has been increased 1.5-million b/d.

The gasoline yield for January of 49.4% (based on crude runs and blended gas liquids) was only one percentage point below the fall rate.

The result is that gasoline output averaged more than 4-million b/d in January, just a shade below the peak it hit last July, when demand averaged 410,000 b/d above the present seasonally low level.

One study shows that the nationwide yield of distillate could be increased to 28.4%, or nearly three percentage points higher than at present, based on a normal price relationship between distillate and gasoline.

That study, made by H. W. Ferguson, vice-president of Humble Oil & Refining Co., showed that in the 80%-to-100%-of-capacity operating range (current refinery operations are at 86%), distillate yield can be varied from a low of 17.6% to a high of 28.4% of crude processed.

Gasoline yield can be varied between 43.3% and 55.5%, based on crude processed plus blended stocks.

Those calculations are based on economical operations at normal price spreads, short of drastic shifts in operations that increase distillate yields at the expense of more profitable operating plans.

Current product prices favor distillate abnormally. At 9⅞¢ a gal. on the Gulf—the highest price in two years—heating oil is in strong demand.

Nearly all spot cargoes for February shipment have been taken. And the tightness in supply has spread to the Caribbean.

On the other hand, 93-octane gasoline at 10¾¢ a gal. is weak, a condition that applies to nearly all gasoline grades with the possible exception of top-octane premium.

In reality, the situation boils down to one of no price spread between No. 2 fuel and the highest-octane regular-grade gasoline.

Regardless of the price situation, however, other economic and physical factors favor keeping distillate yield somewhat below the theoretical maximum, with refiners meeting peak demand by increases in runs.

Generally speaking, the industry is in a gasoline economy, a factor on which refiners have to base their overall operations, regardless of the extremes of a tight inventory of distillate or a surplus position on gasoline that may occur at times.

The primary economic factor influencing emphasis on gasoline is the much larger volume of demand.

Even at its seasonal low, demand for gasoline is higher than demand for distillate when the latter is at its seasonal high.

Also, refiners consider gasoline a salable product the year-round, while distillate demand is highly seasonal, with consumer demand limited to about four months of the year.

The spread between the highest and lowest gasoline demand last year amounted to 900,000 b/d. But in the case of distillate, the spread between the high and low amounted to 2.3-million b/d.

Refiners point out that the operating costs for making distillate and gasoline are close to being equal.

The primary difference in the actual manufacturing costs, refiners say, is in the cost of lead and finishing for gasoline, which amounts to less than 1¢ a gal.

That means that as long as distillate prices are no greater than gasoline, refiners tend to emphasize gasoline output, even at the risk of high stock accumulation in the off-peak season.

Physically, many refineries, including those that date back to World War II, are built to make high yields of gasoline.

One Gulf Coast refiner reports he has taken every economical step to maximize distillate yields, but he still has a yield of about 60% gasoline.

The next step to increase distillate yield further would be to use virgin gas-oil from crude units for heating oil.

This would mean idling expensive catalytic cracking capacity, which uses gas-oil as a feedstock. In addition to lowering motor gasoline output, such a move would reduce avgas production, a profitable business.

Such an operating plan, one refiner reports, would cost about 2¢ a gal. in product realization.

That could be offset by a sharply higher distillate price, or by a sharp hike in crude throughput to provide additional gas-oil feed so that cracking capacity could be used at an optimum rate.

But the latter alternative would, of course, mean that gasoline output would again be at a high level.

Tie Imports to Refinery Runs?

The Administration, still shooting for a new imports program by the month's end, is taking another look at a refinery-run plan.

Several plans that would use refinery runs as a basis for allocation have been discussed in recent months.

First, Matthew V. Carson, Jr., imports administrator, proposed to divide allowable imports among all U.S. refiners on the basis of their runs. Several major importers threatened to withdraw from the voluntary program if the Carson plan was adopted.

Then the Cabinet Committee on Imports studied several plans that would have divided imports by using both runs and historical position. One proposal would have split imports into 80% for historical importers and the remaining 20% for all refiners on the run basis. A 60-40 plan also was discussed.

Finally, in late December, the Cabinet Committee agreed on a 50-50 split in a voluntary plan. But the Justice Dept. warned that a specific division of imports might run afoul of antitrust laws on market-freezing. So the idea was dropped.

Now government officials are swinging back to consideration of runs as a basic guide—probably without specific recognition of historical importers.

Refiners have been asked for permission to make their input figures public, even though the figures have been given to the Bureau of Mines in confidence.

Marling J. Ankeny, director of the bureau, sent this telegram to about 130 companies:

"In the future, import allocations may be related to certain refining inputs. If such a situation develops, may these input figures for your company as reported to the Bureau of Mines . . . be used in determining your company's allocation? Such inputs and allocations would be published for each company as required."

If the reporting companies approve, the Bureau of Mines will give the input figures—normally held confidential—to the Cabinet Committee.

Meanwhile, the Office of Civil & Defense Mobilization has started a quick, new investigation to determine the dangers to national security of imported crude oil and petroleum products.

The new investigation of imports is the result of Justice Dept. fears that

any new program—mandatory or voluntary—might be vulnerable in court because earlier certifications of the threat of imports had been made under Sec. 7 of the 1955 Trade Agreements Extension Act, which has expired.

The State and Defense Depts., acting at the request of the Cabinet Committee, asked OCDM for a new investigation under Sec. 8 of the 1958 Extension Act. The new trade law requires OCDM to take into account numerous domestic factors, such as unemployment and drilling data, when determining whether imports threaten the national security.

OCDM, which is expected to find that imports still need to be controlled, has set a procedure for the investigation. Leo A. Hoegh, OCDM director, will accept written comments on the investigation for 15 days (from Jan. 28), rebuttals for another 10 days, then will decide his view.

Hoegh could take action without waiting for the new findings, but that isn't considered likely.

If the administration timetable is successful, the White House may announce OCDM's findings, the Cabinet Committee's recommended new plan, and Eisenhower's approval in one package by Mar. 1.—but probably not before.

OCDM's investigation cannot be finished in much less than 30 days, under the procedural rules. The agency is expected to make a formal certification to the President, who will refer the findings to his Cabinet Committee.

The committee hopes to have a new plan ready by that time, under the assumption that OCDM will certify imports as excessive.

Sen. Joseph C. O'Mahoney (D., Wyo.) sees the new OCDM investigation as an unnecessary delay, however.

O'Mahoney says the OCDM announcement was an "indication that no action on this problem will be taken for months" by the Administration. He adds that Congress should start its own investigation of Administration handling of the imports situation.

But there are no indications that Congress intends to do anything until the Administration acts—or fails to act by the end of the month.

The Independent Petroleum Assn. of America also calls the OCDM action a delay.

Russell B. Brown, IPAA general counsel, says the 1957 certification on oil imports is still valid.

A Hard Winter for Tankers

ICE PILES UP ON THIS TANKER IN Chesapeake Bay during a January storm that was a help to oil demand but a hindrance to oil delivery.

COLD WAS THE VILLAIN ON Lake Erie, too. Here tugs fight their way through to a tanker that was frozen in solid after its engines quit.

WEATHER SLOWED TRAFFIC ALONG THE St. Lawrence River, but an icebreaker manages to clear a route for ships trapped in Montreal harbor.

Limping Earnings Start Climb Back

Profits of big oil companies—hard hit in the first half of 1958—rallied as the year ended.

This continuation of a trend that was evident in the late summer is shown by the estimated earnings reports at the right, the earliest returns. In almost every case, the companies managed in the fourth quarter to better their showing at the end of the first nine months.

However, few majors will be able to report the full year 1958 as an improvement over 1957. Continental Oil is the only one so far, with a 2% gain in net profits.

The main reason was the business slump over the first half year, featured by the absence of any appreciable growth in domestic demand, and resultant low oil prices. Most oil companies found that even the strengthening price structure in the second half was not enough to prevent lower average prices for crude and products over the full twelve months.

"Our earnings for the first six months of 1958," says Atlantic Refining's president, Henderson Supplee, Jr., "were nearly 70% below the comparable period in 1957."

It was the turnabout of the general business economy that restored the good humor of oil executives and stockholders.

Some of the oil companies report that, by the end of the year, their sales and revenues were at an all-time high (Jersey Standard's, for example). All companies showed marked improvement.

Atlantic Refining came within 5% of making it all the way back to the company's 1957 level of earnings.

Most oil companies expect the late upsurge to continue through 1959. The big factor is the forecast that demand will rise 4½% to 5%—with total volume somewhere near 9.8-million b/d (PW—Dec.26'58,p9).

Phillips Petroleum's Chairman K. S. Adams and President Paul Endacott observe in a joint statement, "Product inventories in relation to demand are in the best balance in several years. It is natural to expect an increase in the prices of petroleum products in view of the mounting costs of doing business, including the recent general wage increase in the industry. It is a little early to forecast, but if present trends continue, we estimate that both gross and net income in 1959 will be the highest in the company's history."

The rising rate of earnings will tend to boost capital expenditures this year.

Estimated Net Income

(Thousands of dollars)

Company	Full year 1958	Full year 1957	% Change	First nine months % Change
Continental Oil	$ 47,500	$ 46,700	+2%	—5%
Atlantic Refining	33,825	35,670	—5	—35
California Standard	258,000	288,230	—10	—11
Phillips Petroleum	84,200	96,209	—12	—22
Shell Oil	116,500	135,085	—14	—26
Ohio Oil	32,156	41,490	—22	—28
Jersey Standard	564,000	805,000	—30	—30
Imperial Oil	50,500	72,081	—30	—41
Sun Oil	32,061	47,492	—32	—42
Creole	239,000	397,000	—40	—22

One of the more ambitious spending programs for 1959 is that of California Standard. The company's capital and exploratory expenditures will reach $400-million—a gain of $50-million over 1958.

Taxation continues to act as a brake on oil-industry earnings. One of the biggest bites was taken by the recent income tax revision of the Venezuelan government. Creole Petroleum alone is paying over $90-million in increased taxes, as a result of the revision.

The growing weight of the tax burden in the U.S. is summarized by Jersey Standard this way: "Despite our decline in net earnings, income and operating taxes—together with import duties, consumer taxes, and other payments to the U.S. and foreign governments—again increased in 1958."

Venezuela Plans Tougher Rules

Oil companies in Venezuela, already hit by a bigger income tax bite, are now facing new and tougher government controls over oil operations.

The Ministry of Mines & Hydrocarbons this week is putting the finishing touches on a proposed revision of the 1943 regulations that supplement Venezuela's hydrocarbons law. A 68-page draft was distributed to the oil companies for comment last week.

Once the proposal is in final form, it will be submitted to the Cabinet for approval. After that, it would be put into effect by executive decree.

The proposed new regulations would raise operators' costs, restrict operations somewhat, and increase red tape. But the over-all effect will depend on how rigidly the new rules are applied.

In general, the draft spells out company obligations in greater detail and adds some new ones.

Some of the new provisions are already in practice, though they are not written into the 1943 regulations.

In addition, the revision extends to old concessions some provisions that were included in new concession terms in 1957—such as the government's right to extract minerals and other non-hydrocarbon substances from crude.

Proposed new well-spacing rules would amount to a change in concession terms if applied inflexibly.

Drilling would be prohibited within 1,200 meters of open acreage or a National Reserve boundary, compared with 30 meters at present.

Within a concession, well spacing would be 600 meters instead of the present 60 meters.

Another significant innovation would give the government the right to take all wasted gas—either for its own use, or for transfer to third parties. This has special importance because of its possible impact on long-standing government and private proposals to build gas liquefying plants.

The draft regulations apparently

open the way for prorating, by empowering the government to control production in relation to market demand.

Field inspectors would have to approve any changes in rates of production and gas reinjection under the new regulations.

Another change: Permission would be required to drill wells, and for certain other operations, which at present require only notification to government inspectors.

An entire new chapter on conservation spells out forbidden practices, such as wasting of reservoir energy and failure to unitize fields or employ secondary recovery when feasible.

Most Buyers Meet Permian Price Cuts

Permian Basin producers this week faced the bleak prospect of possible purchaser proration of crude by two strike-bound buyers, in addition to price reductions.

At midweek, the 7¢-a-bbl. price reduction initiated by Shell Oil Co. on Jan. 10 for the three grades of West Texas-southeastern New Mexico crudes (PW—Jan.16'59,p17) had been met by nearly all major purchasers.

The cuts affect nearly 1-million b/d of the approximately 1.5-million b/d produced in the basin.

The cuts lower the top posting of West Texas-New Mexico sweet oils to $3.08 a bbl. Intermediate crudes were cut to a top of $3.01 a bbl., and sour oil was cut to $2.95.

Gravity differentials on sour oils below 40-gravity were increased from 2¢ to 3¢ a bbl.

The only holdouts to the price cuts among the major buyers are Gulf Oil Corp., the largest buyer in the area, and Humble Oil & Refining Co.

Gulf Oil's Port Arthur (Tex.) refinery and Shell Oil's Wood River (Ill.) plant, both of which run Permian Basin crude, have been shut down by labor disputes, primarily over the issue of job assignments.

The Port Arthur walkout, which started at the 270,000 b/d refinery last week, involves the Oil, Chemical & Atomic Workers Union. The major issue is assignment of work to various crafts.

Gulf uses about 100,000 b/d of Permian Basin sour crude at Port Arthur. It has notified producers that "certain grades of crude . . . will be bought on a prorated basis."

The strike at Shell's 175,000 b/d Wood River plant started late Friday.

LNG May Win New Role

Liquefied natural gas may be able to develop a substantial domestic market in addition to vast potential markets abroad.

Right now, most attention is being paid to the possibility of tanker shipments of LNG to Europe and other fuel-hungry areas.

This aspect was highlighted last weekend when a tanker left Lake Charles, La., bound for England with LNG.

It was the first such shipment, and clearly an experimental one. Several other trips are planned before a final decision is made on whether to develop fleets of such tankers and to build other facilities needed for regular, big-scale shipments abroad.

Backers of the project are highly optimistic, however, and hail this week's experimental shipment as "the prelude to a new era" for natural gas.

The experimental shipment is being made in the Methane Pioneer, a converted freighter. It is owned and operated by British Methane, Ltd., a Bahaman corporation formed by Constock International Methane, Ltd., and the Gas Council of Great Britain.

Meanwhile, there are indications of growing interest in the possibility of a substantial U.S. market for LNG.

The domestic potential centers largely on the utilization of liquid methane by large utility firms and others in order to meet peak winter demand.

Peak demand, always a problem, is becoming even more so now because of increased demand for gas in areas far from producing fields. Too, the constantly increasing cost of pipeline facilities makes the job of meeting such peak demand an expenisve operation.

This situation has given rise to consideration of the use of liquefied natural gas to help meet these peak demands.

The idea is this: A utility firm, for example, would install a liquefaction plant to liquefy natural gas from its pipeline supplier and store it for use in meeting peak demands.

The gas would be liquefied and stored during off-peak periods, when pipeline capacity and gas supply are readily available.

The most attractive point of such an operation is that it would enable a utility company to serve more customers because it would be able to meet their peak demands.

Backers of the LNG plan readily admit that where ample underground storage facilities for natural gas exist —as in an abandoned field—such storage is more economical than gas liquefaction and storage.

Also, they say, it probably would not be feasible for a relatively small natural gas utility or other user to install and use liquefaction facilities.

The LNG plan has already been presented to several large gas users. Constock-Pritchard Liquefaction Corp., of New York, which is pushing the method, says the program is now under "active consideration" by several firms.

Record Depth Hole Abandoned

The world's deepest test has proved to be a duster.

The test—the Phillips No. 1-EE University, in Pecos County, Tex. —had been drilled to a record depth of 25,340 ft. It had reached its formation goal, the second Ellenburger, at 24,974 ft., but the attempt was fruitless.

Phillips Petroleum Co. ordered the No. 1-EE abandoned after successive tests up the hole were unsuccessful.

The final test was made through casing perforations at 8,650-85 ft., in the Wolfcamp. Some gas was indicated, but it apparently was determined to be noncommercial.

Earlier tests had been made in the Ellenburger and the Devonian, but neither proved out.

Numerous records were set during the drilling of the unsuccessful hole. These included, in addition to depth, the longest string of casing ever run, the deepest whipstock ever attempted, and the deepest perforations ever made.

It has been estimated that the test cost around $3-million. For this, the company obtained geologic information—but no gas.

The well was started in October, 1956, and was bottomed at its record depth two years later.

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What's New / IN THE INDUSTRY

The possibility of a reduction in Middle East crude prices posed a serious threat to the industry's economic stability this week. Such a possibility springs from the 10¢-a-bbl. discount on top-gravity Arabian crude made by Standard-Vacuum Oil Co. and California Texas Oil Corp. to buyers in Japan—including affiliates. The discounts were pressured by Japan's foreign exchange allocation system favoring low-gravity oils.

Some international company executives say the move will lead to open price breaks. "This discount is the beginning of many changes," predicts one. "There likely will be price reductions in the Middle East over the next six months.

Reductions in Mideast posted prices would have a direct impact on crude prices in all producing areas, including the U.S. There has been considerable discounting on Mideast oils for some time, primarily freight allowances or discounts based on quantity, indicative of the weak world market for crude. And downward adjustments in postings already have hit many U.S. crudes.

•

The first Florida offshore test since 1945 will be drilled by Gulf Oil. It will be on a state-owned tract 12 mi. southwest of Key West. The drilling, to start about Feb. 15, will be in 12 ft. to 15 ft. of water. Gulf plans to go as deep as 15,000 ft. if necessary.

•

Alaska is having the biggest leasing boom in its history. This was pointed up in a report made this week by the U.S. Bureau of Land Management. The agency noted, for example, that in a ten-month period from June 30, 1957, applications for leases exceeded 30-million acres, bringing the total under lease or applied for to 39-million acres. This, the agency said, was well over half the total amount under lease in the other 48 states, including offshore.

•

Esso Research & Engineering will conduct advanced research on rocket fuels. The company has a one-year nonprofit contract from Army Ordnance, aimed at developing more energetic solid fuels.

•

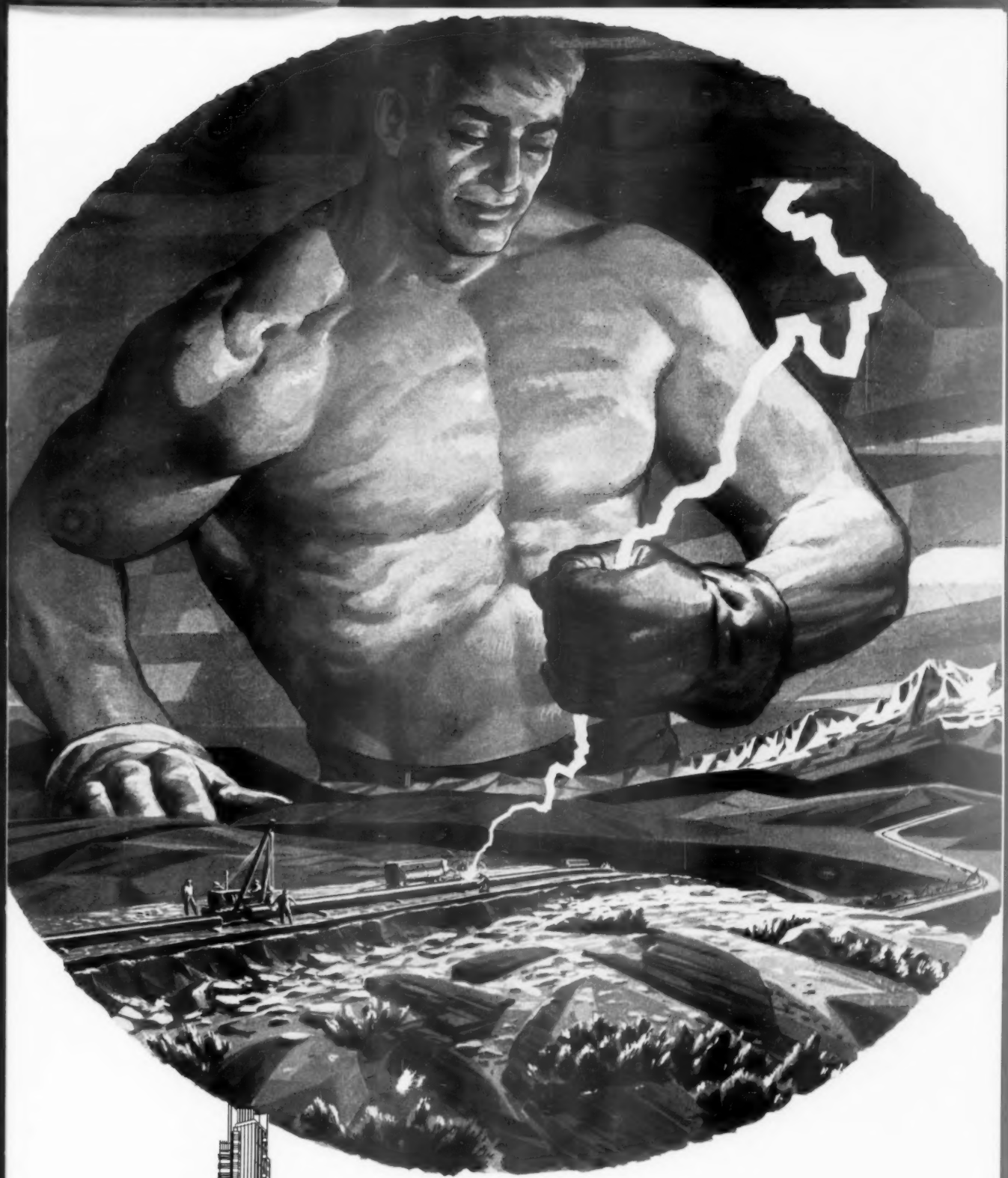
A plan to transport up to 50-million cu. ft. daily of natural gas to New York has been turned down. The Federal Power Commission has rejected a proposal in which Consolidated Edison Co. was to buy gas directly from Texas producers for use in its mid-Manhattan electric generating plant (PW—May23'58,p38). The gas was to be transported for a fee by Transcontinental Gas Pipe Line Corp., which would also sell some of its own gas to Con Ed during certain periods. FPC, in rejecting the plan, said there were public needs which were more urgent than the proposed industrial use.

•

Sinclair Oil Corp. has abandoned its efforts to acquire assets of Texas Pacific Coal & Oil Co. Its purchase offer, which had not been acted on by TP, has been withdrawn. The planned acquisition has been under attack by the Texas attorney general, who had instituted legal action to stop it.

•

Harry D. Collier, 83, retired chairman and president of Standard Oil Co. of California, died last week. He joined the company in 1903 and figured prominently in the company's expansion to the Middle East.



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Looking Ahead in Washington

McGraw-Hill
Washington
Bureau
February 6, 1959

Sen. Estes Kefauver (D., Tenn.) will try to avoid more hearings on his pricing bill, S-11, this year. The perennial fight over the measure is beginning to shape up. Kefauver has 24 cosponsors from both parties for the bill, more than he has ever had before. His first effort will be to get it approved by the antitrust subcommittee of the Senate Judiciary Committee. Kefauver is again chairman of the subcommittee, and still has the necessary votes in that unit. But Senate Minority Leader Everett Dirksen (R., Ill.), if he fails to slow the bill with subcommittee hearings, will again try to block action in the parent Judiciary Committee. In the past, Dirksen and his supporters have been successful.

•

The government soon will stop research on underground gasification of coal. Research in this area—to produce a commercially feasible gas from coal—has been concentrated recently in a joint government-industry project near Birmingham, Ala. The Interior Dept.'s Bureau of Mines and the Alabama Power Co. have successfully produced gas from coal in place, but not economically. So the Bureau of Mines expects to recess its research in the next few months. British research also has recently been called off.

•

A new oil industry critic is emerging in the House. He is Rep. Samuel Friedel (D., Md.), now starting his fourth term in the House representing a Baltimore district. So far this year, Friedel has introduced bills which would repeal congressional approval of the Interstate Oil Compact, repeal the Connally "Hot Oil" Act, and provide for a federal fair trade law. Friedel is a member of the House Interstate Commerce Committee, but ranks only ninth in seniority.

•

The Treasury Dept. now doesn't expect many major changes in new life-of-equipment tax rules. The Internal Revenue Service's revised edition of Bulletin "F"—spelling out regulations for the taxable life of plants and equipment—still has not been approved by Treasury higher-ups. The new bulletin, awaited for months, at first was expected to contain liberalized rules. Now, however, officials say they don't see the need for any big changes. But there's still a chance that the government will approve a shorter taxable life for some oil industry equipment because some officials feel that this type of equipment deserves special treatment.

•

The Interior Dept. is getting ready to challenge more oil and gas leases in western states. Interior's Bureau of Land Management is expected to start administrative action soon in New Mexico, Montana, and perhaps Utah and other states to revoke federal leases allegedly obtained through "straw men" (PW—Jan.16'59,p16). The first action was started recently in Cheyenne, Wyo., where the government is seeking cancellation of leases on 63,459 acres of land. The Wyoming complaint names 86 parties as contestees. After contestees file their answers, a hearing will be held by a Bureau of Land Management examiner to determine the validity of the leases. Contestees have the right to appeal any decisions to the bureau and to the Secretary of Interior. If the secretary upholds cancellations, federal court action could be asked by lessees.

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Large Gas Province Is Shaping Up

The McAlester-Arkansas River Basin of Oklahoma and Arkansas is growing increasingly important as a gas-producing province.

Though the Oklahoma side is known as the McAlester Basin and the Arkansas side as the Arkansas River Basin, the two areas make up a single geological unit. There is more faulting, however, on the Arkansas side.

While there has been gas production on both sides of the basin for years, the area just now seems to be coming into its own.

There are some oil men who believe the area is heading for one of its biggest years. Interest in the area, certainly, is at an all-time peak.

George B. Holden, director of the Arkansas Oil & Gas Commission, looks for a "minimum of 10% increase in drilling and a maximum of 20%" in the Arkansas Valley this year.

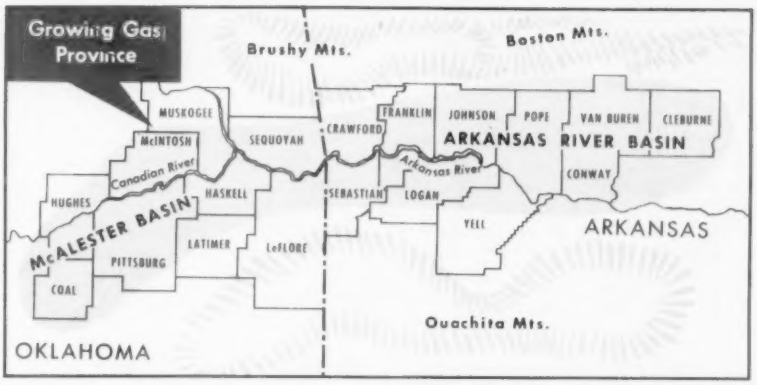
Gas found on both sides of the basin is largely from the Pennsylvanian. Though some oil shows have been found, there is no production in the Arkansas portion. On the Oklahoma side commercial oil has been found only in Coal County. The Coal County oil has been found in both Pennsylvanian and Ordovician beds (PW—May2'58,p19).

Gas in the Arkansas River Basin is found in the shallow Atoka and Morrow Group of Pennsylvanian age. The Atoka is found from the surface to about 4,000 ft., generally. The Morrow Group consists of the Kessler, Brentwood, and Hale formations, generally found between 5,300 ft. and 5,690 ft.

The Atoka and Morrow account for most of the gas production on the Oklahoma side, too. Early last year, however, Anderson-Prichard Oil Corp. No. 1 Cook, section 15-in-11e, Coal County, flowed gas at the rate of 4-million cf/d through perforations at 11,016-216 ft. in the Bromide (Ordovician). The hole was lost, however, and a second nearby venture—No. 2 Cook—was carried to 11,884 ft., with open hole below 10,871 ft., and tested for a disappointing 465,000 cf/d of gas.

Despite the lack of oil to date, many operators make no secret of the fact that they are still searching for it.

But others, particularly on the Oklahoma side, are frankly searching for gas in preference to oil.



CONTINUED DISCOVERIES in widely-scattered areas of both basins—actually constituting one geologic province—are speeding gas development efforts in both states.

Two theories are generally advanced to explain the lack of oil in the basin as a whole.

The first of these is the carbon-ratio theory, which holds that the ratio of carbon content beyond a certain percentage precludes the formation of anything but gas.

The other is the hydrocarbon theory concerning the migration of oil and water to a higher place from a basin, leaving only gas.

Neither theory, however, seems to have many disciples among those interested in the area. Some point to the Anadarko Basin as an exception to the carbon-ratio theory and say: "If it happened there, it can happen here."

Construction of a $6-million natural gas pipeline in northeastern Arkansas is certain to boost activity in this end of the basin.

Arkansas Louisiana Gas Corp. is building a 100-mi. line through the Ouachita Mountains, from Aetna field, Franklin County, to tie-in with the company system at Jones Mills, between Malvern and Hot Springs.

Construction began last month, and is expected to be completed in March.

Some gas from both sides of the basin currently is being taken by Fort Smith Gas Corp. And some from the west portion of the McAlester Basin is being taken by Oklahoma Natural Gas Co.

Completion of the pipeline will stimulate new exploration and enable many currently shut-in fields in the Arkansas portion of the basin to go on production.

R. A. Dumas, of the Arkansas commission, reports fields presently shut-in for lack of market are Coal Hill, Booneville, Jerusalem, Kibler-Williams, Knoxville, Old Hickory, Paris, Prairie View, Spadra, and Union City.

Of these, Booneville and Paris, in Logan County; Knoxville, in Johnson County; Old Hickory, in Conway County; and Union City, in Johnson County, were discovered last year. The most recent discovery among these is Old Hickory, brought in by the J. G. Beard Estate last October.

New pays also were found last year in Coal Hill, Johnson County; Spadra, Logan County; Cecil and White Oak, Franklin County; and Old Hickory.

Gulf Oil Corp. was a big factor in these discoveries, hitting at Booneville, Knoxville, and Paris, and adding an important new pay at Spadra.

In comparison, only one new field —Kibler-Williams, Crawford County —was discovered in 1957. Holden believes discoveries this year "should be equal to, or perhaps above, those of 1958."

Despite the lack of ready market for all gas produced in the Arkansas portion last year, wildcat and development drilling has continued at a brisk pace.

A total of 22 producers were completed in 12 fields last year (including one dual completion). Five of these were completed in Gragg field, Sebastian County, and four in Aetna field, Franklin County.

There was only one dry hole—in Coal Hill field.

Another 13 development holes are currently being drilled. And there are four wildcats under way—one each in

Cleburne, Crawford, Franklin, and Madison Counties.

One commission official believes that operators are continuing their drilling in the hope of accumulating sufficient reserves to justify the laying of gathering lines.

Gas production in northwest Arkansas last year was above 22-billion cu. ft., compared with 17-billion cu. ft. in 1957.

Both the pace and tenor of work on the Oklahoma side of the basin were set early last year (PW—May 2'58,p19).

Gas discoveries at widely-separated points, as well as the two oil discoveries in Coal County, encouraged further drilling along much the same pattern.

Pools found in Coal, Okmulgee, McIntosh, and LeFlore Counties were successfully offset. Some wildcats probed formations around the edge of the basin, but were unsuccessful. Among these were two tests in southern Muskogee County, and one each in Sequoyah and McIntosh Counties.

A new test—T. Jack Foster No. 1 Burke-McBee, section 15-13n-25e—is being made in Sequoyah. But this venture, technically, is on the Brushy Mountain structure of the Boston Mountain plateau of the Ozark Uplift. Its nearness to the edge of the basin, however, will cause it to be watched with considerable interest.

Pure Oil Co. and Oklahoma Natural Gas Co. No. 1 Bauman, Pittsburg County, Okla., is the most recent discovery in the basin, and the first in the area for 1959.

This wildcat, drilled to 5,434 ft. in the Ordovician, was completed in the Cromwell (Pennsylvanian) sand for 3,283,000 cf/d of gas through 1-in. choke and perforations at 4,368-90 ft. and 4,420-55 ft.

The discovery, only 1½ mi. north of the shallow Northeast Canadian gas field, opens a new zone for the area. The Canadian pool produces gas from about 1,400 ft.

In Hughes County, in the western end of the basin, Bell Oil & Gas Co. No. 1 Lackey, section 27-5n-11e, flowed 3,140,000 cf/d of gas through 24/64-in. choke and perforations at 3,144-218 ft. in the Hartshorne (Pennsylvanian) sand.

Though most drilling is shallow, costs are relatively high in the basin.

A 4,000-ft. to 5,000-ft. hole on the Arkansas side runs from $90,000 to $155,000 to complete, largely because of the hard rock formations. On the Oklahoma side, the edge drilling is considerably less expensive than central basin drilling.

Air drilling is used rather extensively in the Arkansas Valley, but only slightly in Oklahoma, where mostly conventional rotary mud drilling is used.

Cable tool drilling is generally used to drill the harder formations to around 3,000 ft. or so, with a switch to rotary for completion.

The high costs pose a stiff barrier to deeper tests.

It is believed that a test to reach the Ordovician at the basin's deepest point would shape up as a multi-million-dollar operation. So, until there is more assurance of a payout, it's not likely such an operation will be undertaken.

The deepest part of the basin, it is felt, is near the border, in Oklahoma's LeFlore County. It's speculated that there may be as much as 10,000 ft. of Atoka that will have to be drilled. Near McAlester, Pittsburg County, some 6,500 ft. of Atoka were drilled at a test in section 28-6n-17e.

With respect to deeper drilling, however, comparisons again are made with the Anadarko Basin, where early deep tests proved disappointing and expensive. But a few discoveries over a wide area provided the necessary shot in the arm.

Virtually the entire basin has been picked over by landmen. Most of the new acreage has been acquired by major companies.

The intensified lease play has rounded out purchases in the area. McIntosh and Pittsburg Counties, in Oklahoma, have received the biggest lease plays in the basin. Overlapping interests in these counties have led to competitive bidding in which bonuses have been lifted considerably above the average paid elsewhere in the basin.

But while the majors are playing the leading role in the lease play, independents continue to pick up smaller tracts. And they lead in drilling to date.

It's virtually certain, however, that the majors will increase the tempo of their drilling activity in the months ahead.

SITE PREPARATION for gas processing and recycling plant nears completion as . . .

Weeks Island Gas Project Begins

Major construction will begin early this month on a Shell Oil Co. 120-million cf/d gas processing and recycling plant at the big Weeks Island field near New Iberia, La.

After being processed, some 70-million cf/d of gas will be reinjected into the producing formation to maintain pressure.

The remaining stripped gas will be sold.

Located on state highway 83, some 20 mi. south of New Iberia, the plant will have 25 employees, and will include a combination office and laboratory.

The project is under control of Shell's New Orleans Area office.

Locations will be staked soon for two injection wells.

Current plans also call for the drilling of three additional gas producing wells on the north flank of the Weeks Island structure. One of the proposed wells is nearing completion, and the other two are to be completed prior to final construction of the plant.

The contract for the plant construction has been awarded to Farnsworth & Chambers, Inc. Dixie Construction Co. is now finishing the grading and leveling work.

Two Oil Plays Hold Michigan Interest

The fast-growing Scipio and Peters oil plays in south and southeast Michigan are giving the state a new lease on its production life.

Discoveries have started to flatten the state's downward production curve, which fell from over 23-million bbl. in 1938 to about 9¼-million in 1958.

The 1959 production figure, however, is still cautiously projected at about 10-million bbl., plus or minus a million.

Scipio and Peters fields, both discovered in 1957, are located in Hillsdale and St. Clair Counties, respectively.

The most active of the two is the Scipio area, where completions are pointing toward a northwest-southeast trend covering 10 mi. or more in Hillsdale, Jackson, and Calhoun Counties.

So far, Scipio field itself extends about 1½ mi. in a northwest-southeast direction, and is about ½ mi. wide.

The latest discovery is Turner Petroleum Corp.-McClure Oil Co. No. 1 Blair, section 20-4s-3w, in Jackson County, 5 mi. northwest of Scipio field.

The well was completed for 240 b/d of 42-gravity oil from the Trenton-Black River formation (middle Ordovician) at a depth of about 3,826 ft.

This discovery is on trend with Scipio field and Tom Marsh-McClure No. 1 Rosenau, section 23-3s-4w, Calhoun County, about 10 mi. northwest of Scipio field.

The No. 1 Rosenau also produces from the Trenton, and was brought in flowing 295 b/d of 38.5-gravity oil.

Scipio field production is also from the Trenton, with an allowable of 150 b/d per well on 20-acre spacing.

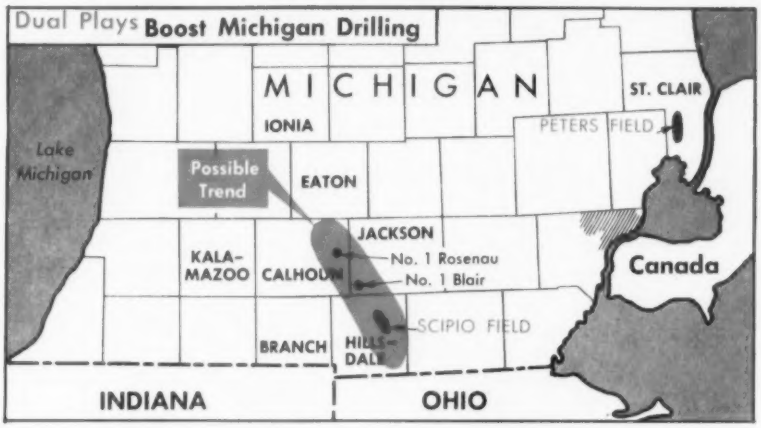
At last report, there were 25 producers in Scipio, and a half-dozen rigs working in the area. During December, Scipio produced 86,052 bbl. of oil.

Though it is too early to be sure, there is strong belief that the northernmost strikes will link with Scipio field.

State geologist G. D. Ells says that, at present, there is not enough information available to be sure whether or not the reservoirs are separate.

For the time being, No. 1 Blair has been designated Pulaski pool, since it is in Pulaski township.

Lease prices, however, seem to be keyed to the belief that the newer strikes are connected to Scipio. A post-Blair transaction for rights to 40 acres was closed recently for $50,000, plus one half of the oil for the owner.



The hope that Scipio might extend southward into northern Ohio was dimmed somewhat by a recent dry hole just southeast of the field.

Ells says the dry hole was on trend with the No. 1 Blair and No. 1 Rosenau, located northwest of Scipio.

But, he adds, this dry hole does not entirely rule out the possibility of the Scipio play extending into Ohio, because the Trenton is a narrow pay.

Ells says there had been some dry holes drilled between Scipio and the northern wells, but not exactly on the same "ruler line" running between the wells and Scipio field.

On the other hand, some state officials and oil men believe that, in the future, the Scipio play will spill over into Branch County, which adjoins Hillsdale to the west, and Kalamazoo, Easton, and Ionia Counties, to the north and northwest.

Scipio field was discovered by Clifford Perry No. 1 Houseknecht, section 10-5s-3w, Hillsdale County, in July, 1957.

This well, drilled on a nontechnical location, produces from about 3,780 ft. Since then, other Scipio drilling has been based mostly on gravity surveys.

Both cable tools and rotary rigs are used in Scipio drilling. Some wells have been drilled with rotary rigs down to the pay and then completed with cable tools. Others have been entirely drilled and completed with rotaries. The more recent wells have been completed with rotary-cable combinations.

Trenton production largely is from areas where the rock is tightly folded, fractured, and dolomitized.

Total Scipio oil recovery has been conservatively estimated at from 10,000 to 12,000 bbl. per acre.

Peters field, with 11 producers and four rigs working, is runner-up to Scipio for leadership in state oil activity.

Although oil was discovered in Peters field in October, 1957, it wasn't until the latter half of 1958 that development drilling began to move. Ten of the field's producers were completed in this period.

The Peters discovery was Glen Mills No. 1 Waltos, section 22-4n-15e, St. Clair County, which was completed for 52 b/d of 39-gravity crude from 2,615 ft.

Peters production is from the Brown Niagaran zone of the Salina (upper Silurian). The wells produce from depths ranging between 2,600-700 ft.

The production allowable is around 150 b/d of oil and/or 200,000 cf/d of gas per well. Spacing is set at 20 acres.

The field, so far, is about ½ mi. wide, and 1¼ mi. long in a north-south direction.

In addition to the field itself, the neighboring area is drawing interest.

Approximately 2 mi. southwest, in Boyd field, operators are testing an oil prospect. And there is strong possibility of an oil completion just southeast of Peters field, according to Ells.

A pipeline to Detroit, now in the planning stage, is expected to accelerate drilling in the Scipio area.

Aurora Gasoline Co. recently announced plans to proceed with engineering studies for a pipeline approximately 70 mi. long, from Scipio field to its 44,000 b/d refinery in Detroit (PW—Jan.23'59,p100).

Aurora and Gladieux Oil Sales, of Fort Wayne, Ind., currently are the principal buyers of Scipio crude. Most Aurora refinery products are marketed

through its Speedway Petroleum Corp. affiliate, which operates in southern Michigan and northern Ohio.

Aurora Gasoline Co. and Panhandle Eastern Pipe Line Co. are the principal operators in the Scipio and Peters areas.

Aurora holds extensive acreage in the Scipio area. Carter Oil Co. and Sun Oil Co. are the most active majors in the area. Other active operators around Scipio include McClure Oil Co., Turner Petroleum Corp., Tom Marsh, and Clifford A. Perry & Son.

Panhandle Eastern is the principal operator in the Peters area. Peters crude is collected by Osceola Pipe Line Co. for its own use and for resale to Crystal Refining Co., Carson City, Mich.

The crude is trucked approximately 160 mi. to Crystal's refinery at Carson City.

Utah Land Disputes Tangle Oil Titles

The state, the Navajos, and the federal government are haggling over land, with oil men caught in the middle.

Complex disputes involving control of lands within the Navajo Reservation, San Juan County, Utah, are posing growing title difficulties for oil men.

Basically the arguments are: (1) whether Utah, the Navajos, or the federal government controls the lands involved; and (2) whether a 1917 Utah law prohibiting transfer of mineral rights in land exchanges is valid.

An example of the title disruption is the claim by the Navajos to two oil-productive state school sections in the San Juan County portion of the Paradox Basin.

The two sections, one in Aneth field, held by Shell Oil Co., and the other in Ismay field, leased by Carter Oil Co., are claimed by the Navajos on the grounds that:

(1) Navajos lived on these lands in fee occupancy prior to admission of Utah into the union.

(2) Some sort of "trustee" arrangement for all public domain within the reservation was established by passage of Public Law 868 last year, in the last days of the 85th Congress.

The state, through Land Board director Fran Allen, has promised a vigorous defense of its title, and has called on Congress to amend Public Law 868.

Public Law 868 was passed to indemnify the Navajos for lands that would be flooded by the Glen Canyon Dam now under construction by granting them some 60,000 additional acres of surface rights in San Juan County in exchange.

The existing mineral leases on the 60,000 acres granted were not invalidated by the law.

The point at issue is some complicated phrasecology in amendments tacked onto the bill.

Sen. Wallace F. Bennett (R., Utah), who assisted in passage of Public Law 868, terms "implausible" the Indians' claim to mineral rights under the law.

Also in the works is an action that will decide whether Utah or the federal government controls leases in the San Juan River bed.

The point of contention is the navigability of the river. If it's navigable, it comes under state control, if not, it comes under federal control.

An estimated 3,500 to 4,000 acres of proved and semi-proved land in the river bed have been leased by the state to oil companies.

One group of contestants has already been rebuffed in seeking federal rather than Navajo control of several thousand acres of oil and gas leases in another separate action.

The leases in dispute were filed over old mining claims, which were in existence prior to the creation or extension of the Navajo Reservation.

The contestants claim the leases should have been issued, on the ground that the lands are federal public domain and not Indian lands.

The claim was turned down by the Bureau of Land Management, but an appeal to the Secretary of the Interior is expected.

In this dispute, the lands involved have, for the most part, already been leased to oil companies by the Navajos, under competitive bidding. Production has been established on a good part of the acreage.

In two separate suits—before the state supreme court and a federal district court—the state, with Western States Refining Co., is laying claim to between 5,000 and 7,000 acres in Aneth field.

On some of this land, the Navajos have already issued leases to Superior Oil Co. and Honolulu Oil Corp. (PW—Mar.7'58,p30).

Western States, contends that, while the surface of these sections was exchanged by the state for like federal domain outside the Navajo Reservation, the mineral rights could not be conveyed because of a law passed by the Utah legislature in 1917.

The law prohibits conveyance of any mineral rights in state school sections.

Western States claims that the acreage involved in its leases was part of a land exchange made in 1930 and, therefore, that it is subject to the 1917 law.

The U.S. Court of Appeals has ordered a stay of trial of the issues in federal court, pending a decision by the Utah Supreme Court, where argument has been completed.

The resolution of the school-section land dispute could be of great importance to oil men operating elsewhere in the state.

Many thousands of acres of land have been exchanged back and forth between the state and the federal government since 1917.

Utah has four sections out of every township of federal domain. More than 70% of Utah land is federal public domain or Indian reservation.

So far as is known, the Navajos haven't granted any leases on these disputed school sections in the past two years, pending outcome of litigation in state and federal courts.

The Navajos are not appearing in the state courts, apparently because they do not recognize state jurisdiction in this matter.

Montana to Auction Expiring Leases

The Montana Land Board has decided that expiring 20-year leases on state-owned land will be leased again at public auctions.

The board, at its Jan. 15 meeting, directed Land Commissioner Lou E. Bretzke to take such action when the approximately 100 such oil and gas leases expire.

The first of these is due to expire in April, 1960, with others expiring at various times through 1975.

The leases provide for royalty of 12½% of the first 3,000 bbl. of production, 17½% of the next 3,000 bbl., and 25% of all above 6,000 bbl.

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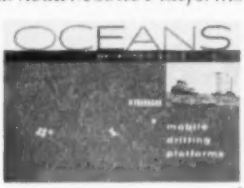

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What's New / IN EXPLORATION, DRILLING, PRODUCTION

Shell Sets Turbodrill Drilling Records

Shell Oil Co. reports that two turbodrill records have been established during drilling operations on its Don Roberts lease, Quitman field, Wood County, East Texas.

The company's production department says the operation, in which a specially-made diamond bit was used with the turbo, gave "the most impressive turbodrilling results to date."

Records set by the Quitman operation include the most footage drilled with a diamond bit in a single run drilled—436 ft., between 8,069 and 8,505 ft.; and the longest single turbine run—61½ hours.

Shell's production department adds that the test results indicate a possibility of using the turbodrill in the field's Rodessa lime interval, at a saving of about 30%.

The Quitman test is part of a series of 24 being conducted by Shell in the U.S. and Canada under a two-year cooperative program with Dresser Industries, Inc. (PW—Nov.14'58,p36).

Shell's report says the penetration rate during the 61½-hour run was 7.1 ft. per hour. The report adds that it normally takes 12 rock bits and 6 rig days to drill an equal interval.

•

Ringwood Case Continued

Oklahoma's "Ringwood Case" gas-price hearing has been continued to Feb. 11, 12, 13, 17, 18, and 19.

The hearing by the state corporation commission climaxes a six-year dispute over gas prices in the field, which was ordered shut down last Nov. 20 (PW—Dec.5'58,p25). The postponement came after three days of testimony, mostly by plaintiffs.

Engineers said the field, under present prices, would be abandoned between 1963 and 1969, but that an increase in prices would extend the life of the field ten years.

Oklahoma Natural Gas Co. said, however, that an application now before the Federal Power Commission may relieve the state commission of its power to fix the price of Ringwood gas, which was selling at about 2¢ per Mcf. when the field was closed.

ONG swaps gas with Consolidated Natural Gas Co. The latter delivers Texas gas to ONG in western Oklahoma, and takes Ringwood gas in trade for sale in Kansas.

•

An Arkansas legislative committee is proposing a bill to ease the cramp imposed on oil men by the state's recent crackdown on salt-water disposal.

The bill, which would allow oil producers to deduct from their severance taxes money spent on installing or tieing into approved disposal systems, was recommended by the conservation committee of the state's House of Representatives.

The Arkansas Water Pollution Commission recently ordered producers in the southwest part of the state to stop disposing of salt water into fresh-water streams within five years.

•

The Texas Railroad Commission has approved a waterflood project for Adair (Wolfcamp) oil field, Terry and Gaines Counties.

Amerada Petroleum Corp. had applied for the permit on behalf of operators in the unitized area.

The commission has received requests from Cities Service Oil Co. for authority to inject gas into the Clearfork zone in the A and B units, Dollarhide field, Andrews County, and to inject gas and water into the Devonian. Hearing on the applications will be held Feb. 19.

•

Oil and gas production and royalty interests in 12 states have been acquired by Nafco Oil & Gas from Oil & Gas Property Management, Inc., Dallas, for $19-million.

In the acquisition, Nafco, a subsidiary of National Automotive Fibres, gets production—totaling 4,200 b/d of oil and 25-million cf/d of gas—plus royalty interests. Chief producing interests are in four Texas fields: East Texas, Old Ocean, Conroe, and Scurry County.

Nafco also acquired in the transaction 50% stock interest in Dorchester Corp., affiliate of Oil & Gas Property which operates 241 gas wells and three gasoline plants in the Texas Pan-

Aneth Reserves: 833,856,000 Bbl.

Aneth area pools in San Juan County, Utah, have 833,856,000 bbl. of high-gravity oil in place, the state Oil & Gas Conservation Commission was told last week.

Core Laboratories, Inc., acting as agents for the commission, said that 22,810,000 bbl., or 2.74% of original oil in place, has been produced since discovery of Aneth, McElmo Creek, Ratherford, Cahone Mesa, and White Mesa fields.

Under present conditions of primary production, however, ultimate recovery at abandonment conditions will be only about 14.31% of oil in place, according to Core Lab.

"Remaining life of the fields under continued primary operations will be approximately 15 years," said the reservoir engineering firm.

It said that reinjection of as much as 70% of produced gas would increase primary recovery by only 2.07%.

A waterflood at reservoir pressure of 1,100 psi., which would increase primary recovery to 28.2%, is recommended by Core Lab.

"In view of gas market arrangements, the present pressure condition of the reservoir, and other likely economic factors, gas injection will probably prove unattractive," said the firm.

Core Lab's report says that "delaying start of water injection until optimum reservoir pressure has been reached will adversely affect the producing rate."

In a related development, Shell Oil Co. this week offered a test to help settle the problem of 40-acre vs. 80-acre spacing in Utah.

In its proposal before the commission, Shell—a 40-acre-spacing advocate—said it would drill several 40-acre wells, and that if tests did not prove this desirable, it would trim production from the wells to an 80-acre rate.

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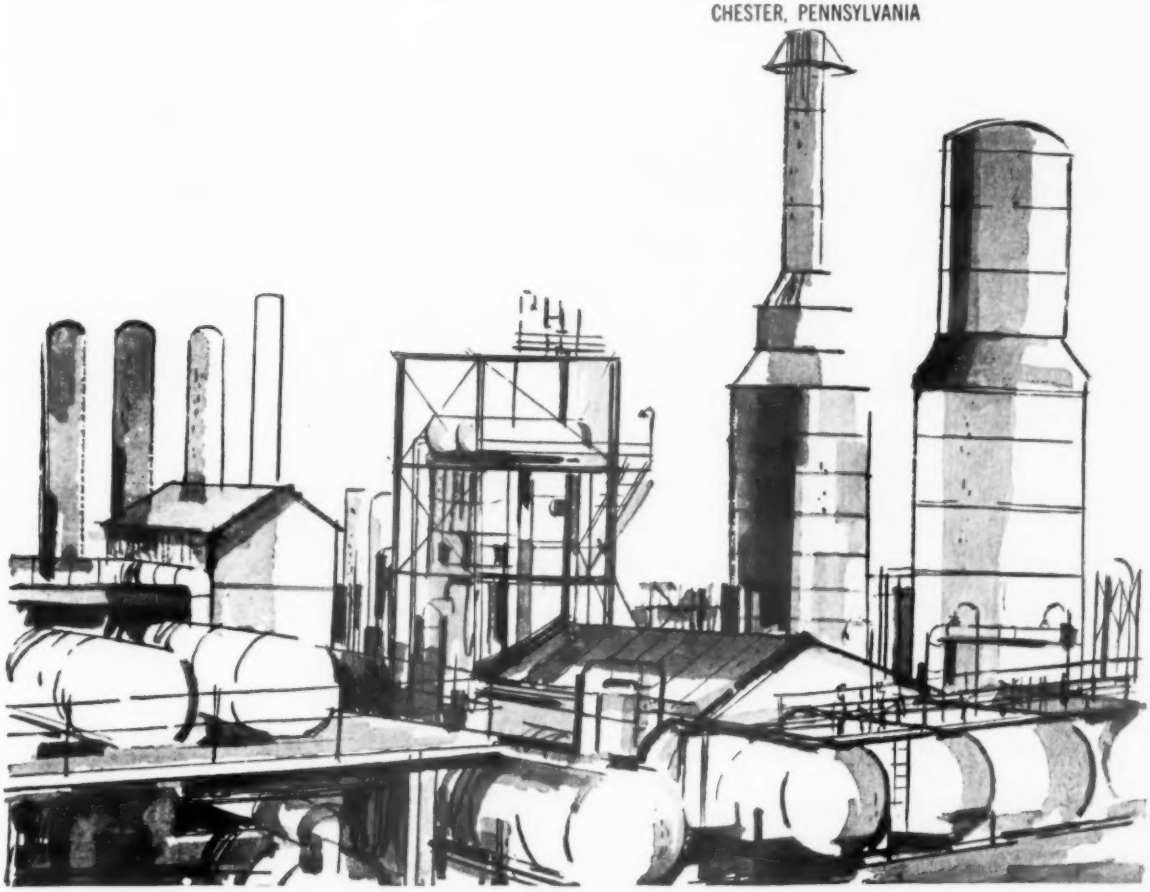

handle-Hugoton gas area. These plants process about 150-million cf/d of gas daily and produce some 4,000 b/d of products.

•

Texas American Oil Corp. will launch an exploration program aimed at finding and producing helium-bearing natural gas in northeast Arizona.

Nash Dowdle, Texas American president, said work will start about Apr. 1 on a 3,520-acre lease block the firm holds in Apache County.

He said one hole will be carried to 3,500 ft. to test all formations above granite.

This report follows announcement of plans to build a $13.5-million helium extraction and processing plant —private industry's first—at Sunray, in the Texas Panhandle (PW—Jan.16 '59,p16).

•

The Alberta government received $1,542,787 from its Jan. 27 drilling reservation sale.

High bid was $914,656 for a 6,720-acre parcel in Pembina field, and was jointly paid by Creel Oil of Canada, Ltd., and by DeKalb Petroleum Corp.

Of the 181,280 acres offered, only 15,360 acres in two parcels near the British Columbia border failed to sell.

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Drilling Highlights

West Texas—Tennessee Gas & Oil Co. No. 1-A Kay Kimball, Gaines County wildcat 5 mi. south of Felmac (Mississippian) field, flowed 44 bbl. of oil per hour on 1 hour, 26-minute, drillstem test of a biohermal reef in the Wolfcamp at 10,350-435 ft. Nearest Wolfcamp production is at Adair field, 20 mi. northwest. The wildcat is projected to 11,500 ft. to test the Strawn.

In Martin County, Cities Service Oil Co. No. 1 Glass, section 29, block 38, T-1-N, T&P survey, recovered 1,930 ft. of 52-gravity distillate, 170-ft. of oil-cut mud, and 240 ft. of gas-cut mud on 5½-hour drillstem test of the Strawn at 10,559-620 ft. The prospect is 1½ mi. southeast of the one-well Fran-Glass pool.

Southwest Texas—The Texas Co. No. 19 McGill Bros., Encinitas subdivision, J. A. and A. M. Garcia grant, A-214, Brooks County, was completed as a Vicksburg oil discovery flowing 184 b/d of 39.2-gravity oil through ⅛-in. choke and perforations at 8,030-35 ft. The wildcat was earlier reported by Texaco as a gas-distillate Frio discovery, but this zone has been sealed off. The strike is 4 mi. east of Kelsey Deep field.

South Louisiana—The Texas Co. No. 1 L. B. Sonnier, section 34-11n-4e, Vermilion Parish, flowed 118 b/d of 40.4-gravity oil through 4/64-in. choke and perforations at 13,278-83 ft. The discovery is 4 mi. northeast of recently-discovered Gross Isle field.

California—Union Oil Co. of California No. 1 Hill, section 22-3n-21w, Ventura County, flowed 800 b/d of 34.9-gravity oil through 28/64-in. choke and perforations at 9,654-10,780 ft. to open a new deep zone in the Bridge area, South Mountain field. The upper zone, which is the regular producing zone for the area, has been perforated at 8,780-9,450 ft. and is being placed on production.

Oklahoma—Sun Oil Co. No. 1 Huddleston, section 35-5n-7w, Grady County, flowed at the rate of 1,600 b/d of 40-gravity oil through 1-in. choke and perforations at 9,602-30 ft. in the Basal Hoxbar (Pennsylvanian). The discovery is 1½ mi. southwest of Northwest Chitwood field.

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HERCULES Duplex Polished Rod Stuffing Boxes are constructed from high grade malleable iron (55,000 PSI Tensile Strength) and are rated 3,000 pound test. Flexibility and the cone-shaped Packing Rings are the combination of factors which make the HERCULES Stuffing Box without equal for any pumping situation.

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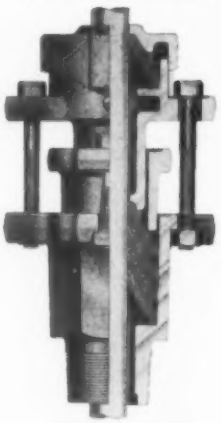
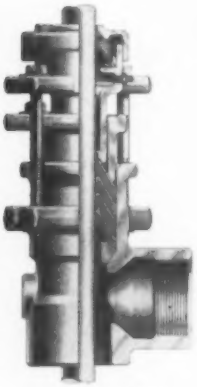


"TEE TYPE" DUPLEX POLISHED ROD STUFFING BOX

HERCULES "TEE TYPE" Stuffing Box is very compact, only 15" high. It is full opening which allows rods to be run or pulled without removing Stuffing Box body. It is furnished in 2", 2½" and 3" sizes with any API Tubing or Line Pipe Thread.



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A double packed Stuffing Box for use on high pressure wells and those that flow intermittently. Especially desirable for wells located near buildings, fire hazards or growing crops. Two compression bolts, in bottom sections, are tightened on lower packing set while replacing packing in upper section. Possess same flexibility as the regular and Tee base type.

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THE DAY AN INDUSTRY WAS BORN

THERE is no more historic day in the drilling industry than that day in 1909 at Goose Creek, Texas, when the first rotary rock bit was run under the watchful eyes of its inventor, Howard R. Hughes, Sr. For what happened that day revealed the real potential of the rotary system and marked the beginning of the rock bit industry.

Mr. Hughes—lawyer and mining engineer, turned drilling contractor—was no novice to rotary drilling. He had personally experienced the frustration of grinding away, days at a time, with fishtail bits without making measurable footage.

The bit he invented was the answer to drilling hard formations with the rotary. It introduced a new principle—conical cutters combining milled teeth that rolled on bottom with a chipping, crushing action and grooved gage surfaces that simultaneously cut the wall of the hole.

The footage drilled with Mr. Hughes' rolling cone bit exceeded, by far, anything that had ever been dreamed possible. Its success, and the success of the Hughes bits developed during the past fifty years, stemmed from a first-hand knowledge of the problems of the industry. Hughes engineers and field representatives today are men of long experience in the industry. Combined with their experience is another important ingredient—*research*—carried on continuously for a half century.

Through the years, Hughes has introduced virtually every major improvement that has been made in rock bits. But no single achievement has had greater impact on rotary drilling than that first rock bit run at Goose Creek in 1909.

In the painting at the left, the artist has re-created the scene of the running of the first rock bit. So important was secrecy that members of the drilling crew were ordered from the rig, and their places taken by Mr. Hughes and his three companions. Then, Mr. Hughes opened a padlocked wooden box, lifted out a burlap-wrapped bit, attached it to the end of the drillstem, and pulled the wrapping away as the bit was lowered into the hole. When it was safely out of sight, the crew was called back to resume drilling.

Enlarged color prints of this painting are available for the asking. Write: Advertising Dept., Hughes Tool Company, Box 2539, Houston, Texas.

HUGHES TOOL COMPANY

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Here's evidence that the big new haulers of Chevrolet's Task-Force 59 bring you more to work and save with than ever before; proof that they've got more of what it takes to cut your costs and keep you going on runs that call for the best performance a truck can put out!

ALL-NEW WORKMASTER SPECIAL V8—boosts performance with 348-cu.-in. displacement, 185 h.p. Optional* on Series 70 and 80 models.

DURABLE WORKMASTER V8 ENGINE—features heavy-duty pistons, Moraine "400" extreme-duty bearings, induction hardened crankshaft for extra durability. Standard in Series 90 and 100; 230 h.p.

TOUGH '59 HEAVY-DUTY TASKMASTER V8— teams compactness with short-stroke efficiency. Standard in Series 50, 50H; optional* in 60, 60H; 160 h.p.

TWO GREAT TRIPLE TORQUE TANDEMS—come equipped with rugged components that boost G.V.W.'s as high as 36,000 lbs. Durable, yet light in weight for bigger payloads.

NEW 50H AND 60H MODELS—biggest savers of all big trucks with G.V.W.'s up to 21,000 lbs. handle heavy-duty hauls that usually require bigger, more costly trucks.

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NEW MIGHT FOR EVERY BIG TONNAGE HAUL! New close-ratio 5-speed transmissions* team with 2-speed rear axles* for top performance. Your Chevrolet dealer can show you these and other money-saving components in Task-Force 59 trucks. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

**Extra-cost options*

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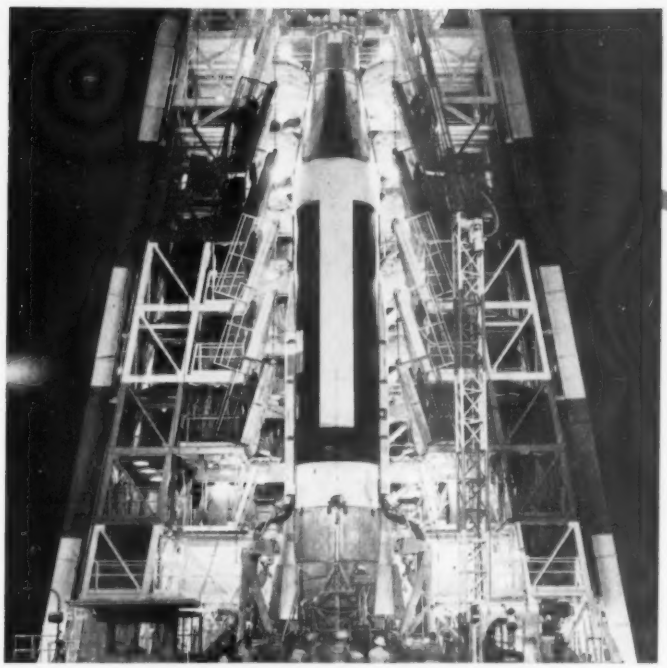


One fingerprint . . .

. . . can cause an explosion in the oxygen fuel loading lines of big missiles at Cape Canaveral. The oil service firm, Dowell, has the job of . . .

Making Sure They Blast Off Cleanly

An old oil field custom—getting everyone together to talk things over—is being used by industry management to perfect missile launching techniques. At a recent Tulsa meeting, more than 75 top scientists heard the latest word on chemical cleaning of missile complexes.

The occasion was a two-day symposium held by Dowell Division of Dow Chemical Co.—the oil service firm that has become a leader in the field of cleaning missile complexes, and has played a vital role in successful launchings at Cape Canaveral, Fla.

At Tulsa, Dowell brought together for the first time the leading missilemen interested primarily in seeing that rigid cleanliness requirements are met. Included were scientists from the U.S. Air Force (in charge of the over-all missile program at Cape Canaveral and elsewhere), the U.S. Army Corps of Engineers (responsible for final cleanliness checks), missile development firms working under government contracts, and independent companies (such as Dowell) charged with cleaning of missile complexes—the structures and equipment that prepare missiles for launching.

The need for extreme cleanliness was stressed by the host company, Dowell, because of the fact that a tiny particle the size of a pinprick in the "lox" (liquid oxygen) system can cause a misfire or a disastrous explosion. Dowell's main role is to clean chemically the piping systems in missile launching facilities right down to the bare etched metal, so that they're 100% free from all foreign matter. These systems include the liquid nitrogen and oxygen lines, the gaseous nitrogen and helium lines, and the hydraulic lines.

The cleaning is done by pumping solvents through the assembled launching systems, or by immersing components in solvents (PW—May23'58, p13).

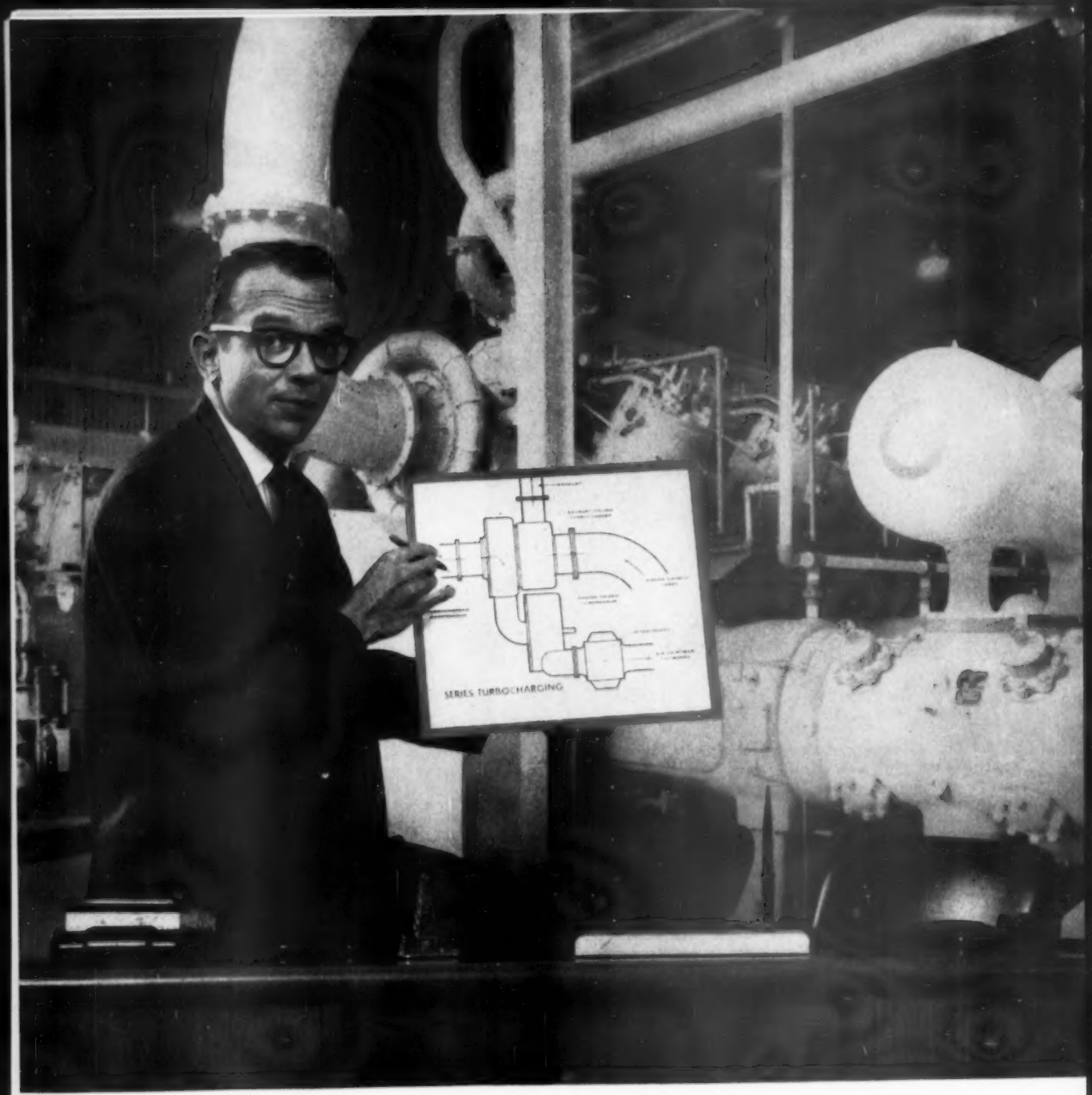
Also underscored at the Tulsa meeting was the need for a foolproof inspection system at missile complexes. The question, "how clean is clean," still hasn't been answered satisfactorily.

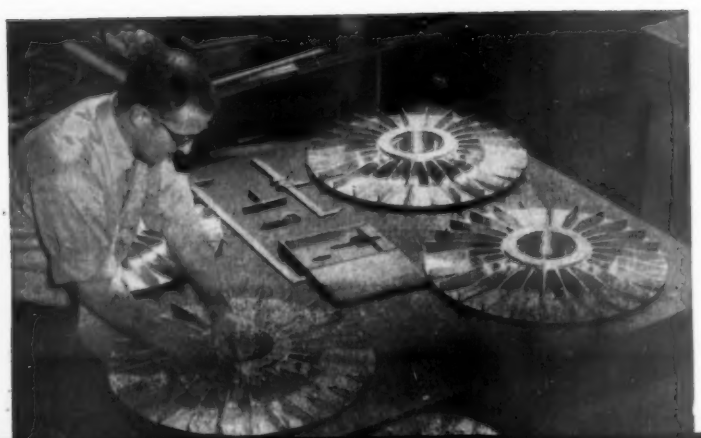
Several key conclusions were reached at the symposium. Among them:

- Solvents, acids, and mechanical methods—such as grinding and brushing—all have their place in missile cleaning. Each must complement the other.
- Ultrasonic cleaning is the ace-in-the-hole. The method beams sound energy into the tank of cleaning fluid to agitate it, and thus permit faster cleaning of small complex components. The method may be used with cleaning-tanks ranging from pint-size to those containing hundreds of gallons of solvents.
- In pickling and etching, researchers have developed means of using corrosive solutions to remove unwanted deposits without harming the bare metal.
- Liquid fluorine systems are in the process of development. Their use will require even greater degrees of cleanliness than liquid oxygen systems.
- Design improvements in gas and liquid systems would go a long way toward eliminating sources of contamination.
- Standardization of specifications, plus adoption of realistic inspection requirements, are the big needs.

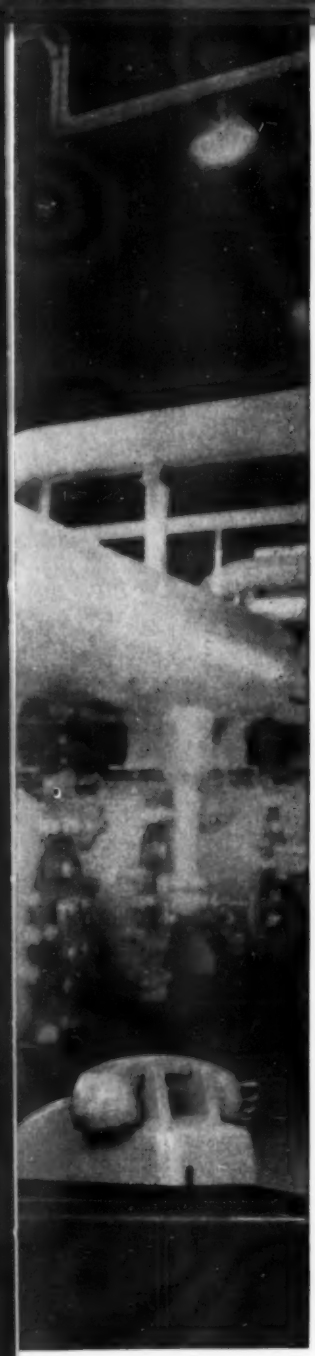
Entry into the missile-cleaning field 30 months ago was a natural step for Dowell, which has been doing the same type of work for oil companies for more than 20 years. Dowell has found that the acids and solvents used in treating ailing oil wells also work well in cleaning boilers, heat exchangers, and other integral parts of oil refineries.

Says a Dowell spokesman, "To us, there is no essential difference between removing calcium carbonate deposits from a boiler, dissolving limestone in the bottom of an oil well, or cleaning missile piping."





Built Entirely By Cooper-Bessemer. Cooper-Bessemer is able to ideally integrate turbocharger system and compressor engine performance . . . and to assure highest standards of materials and workmanship for these precision components.



Donald L. Reed, *Manager Gas Engine Compressor Sales, The Cooper-Bessemer Corporation, explains . . .*

How you get 40% more power with the latest Cooper-Bessemer V-Angle Compressors

The diagram explains Cooper-Bessemer's series turbocharging development. A step beyond ordinary turbocharging, *series turbocharging* assures an extra performance margin throughout the operating range, plus these unmatched advantages:

40% greater horsepower than predecessors of the same bore, stroke and speed.

Reduced fuel consumption . . . as low as 6900 Btu/bhp/hr—proof of series turbocharging's greater efficiency.

Space savings. Greater output, combined with inherent compactness of V-angle design, results in lowest cost per horsepower for housing, foundation, piping, maintenance, supervision.

Superior altitude performance. Inherent flexibility of the series turbocharging system allows unique altitude compensation to assure full rated horsepower and highest efficiency.

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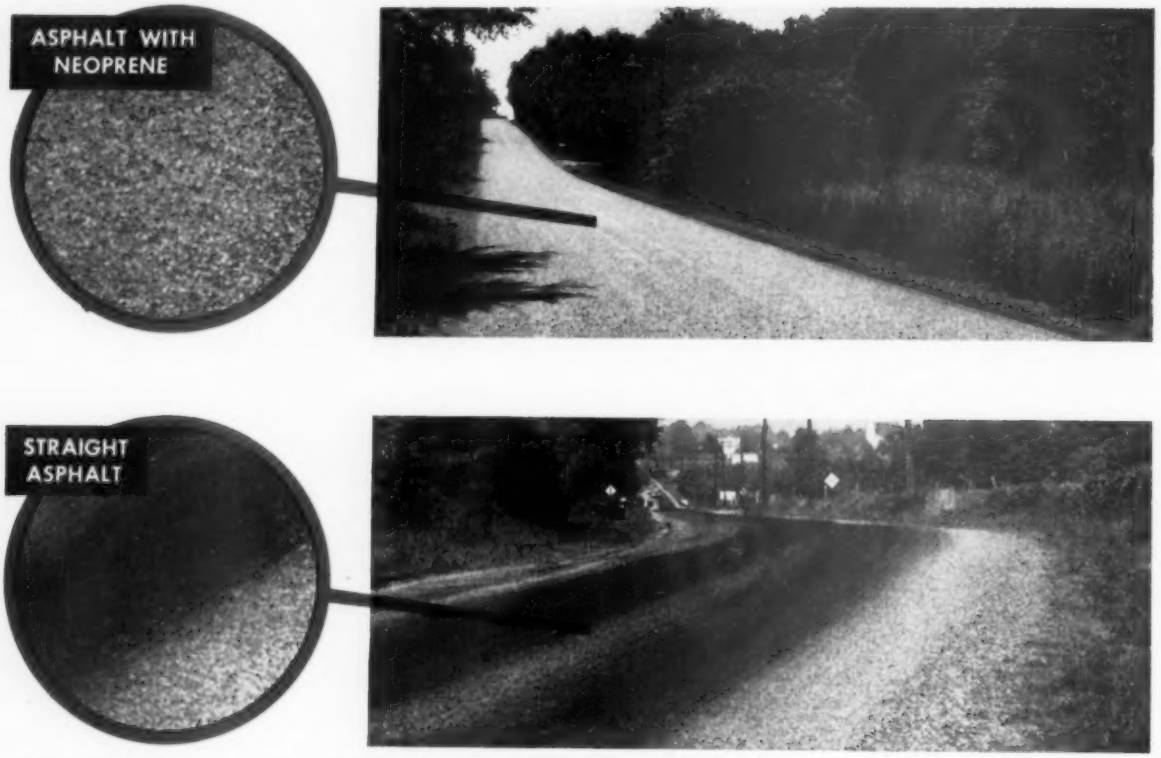
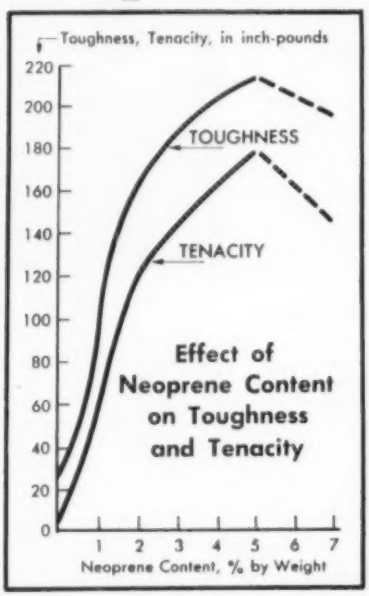


NEOPRENE-ASPHALT ROAD in Delaware (above) shows no asphalt "bleed-through" after two weeks of use. However, the adjacent control section (below) using straight asphalt shows considerable "bleed-through" after the same use.

Neoprene 'Bids' for Asphalt Market



ASPHALT becomes stronger when compounded with up to 5% neoprene synthetic rubber.

Neoprene, an "old" rubber with a "new" future, could prove to be strong competition to natural and other rubbers in the rubber-modified-asphalt picture (PW—Oct.31'58,p24).

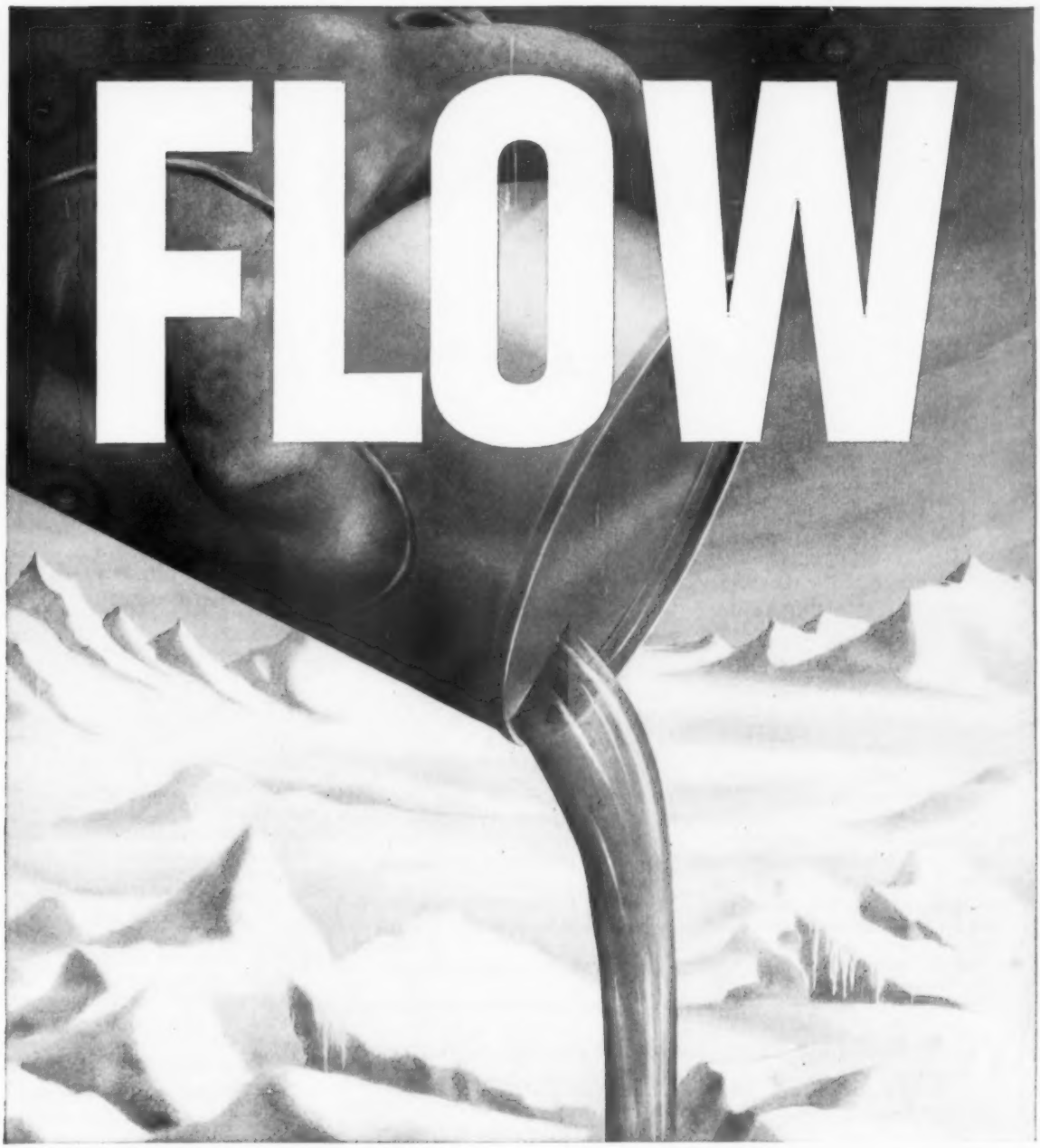
Neoprene, developed and made exclusively by Du Pont, was first commercialized in 1932. For many years this rubber, a chlorinated isoprene, has found its major application as a material that would withstand the action of oils and many solvents.

Though Du Pont began laboratory studies of the interaction between neoprene and asphalt in 1950, it was not until 1957 that the first Du Pont-sponsored "neoprene-modified-asphalt" road was laid. Most of this delay was in finding a simple, relatively foolproof, economical method for adding the neoprene to the asphalt, according to W. L. Williams, of Du Pont's elastomer chemical department.

Husky Oil Co., Cody, Wyo., has laid several neoprene-modified-asphalt roads, some of which are now 3½ years old. Husky was able to get roads down ahead of Du Pont by using a patented method for mixing neoprene latex with molten asphalt, developed by Jewell R. Benson, president of the Asphalt Rubberizing Corp., Denver, Colo.

Nine states have put down over 60 mi. of roads using neoprene-modified-asphalt (NMA), under the guidance of Du Pont representatives.

Test sections can now be found in Delaware (6 mi. on Route 7 between Christiana and Cooches Bridge, plus some 30 mi. put down in 1958 maintenance work); Pennsylvania (6 mi. on Route 142 between Intercourse and New Holland); Michigan (6 mi. on the Ann Arbor-Saline road, starting 1 mi. out of Saline); New Jersey (2 mi. on the Georgetown road at Carney's Point, 2 mi. on the Du Pont Country Club road at Penn's Grove, and 2 mi. on the Cohansey-Aldine road); Oklahoma (6 mi. starting 10 mi. south of Oklahoma City on U.S. Route 77); Ohio (6 mi. on State Route 278 between U.S. Route 50 and Zaleski); Florida (12 mi. on U.S. Route 90, starting about 10 mi. east of Tallahassee); Colorado (6 mi. on



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Enjay has developed the *only complete line* of high quality additives (Paramins®). To meet the most exacting lubrication specifications, insist on Enjay Paramins.

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U.S. Route 160, extending west from Walsenburg); and South Dakota (6 mi. on U.S. Route 12 between Groton and Andover). In every case, control sections, using straight asphalt, were put down for comparison.

Most of the neoprene-asphalt test strips to date are seal-coat (where the asphalt is sprayed onto the surface of the road, then gravel or stone is spread over the top of the asphalt and compacted with a roller).

Seal-coat tests were selected by Du Pont because the relatively short life of such surfaces (compared to bituminous concrete) gives a quicker comparison of NMA performance when compared to conventional asphalt. Neoprene can, however, be used satisfactorily in bituminous concrete mixes, according to Williams.

Increased road life and reduced road maintenance are the primary claims of NMA roads, Williams says.

The Du Pont theory is that the neoprene forms a lattice (a physical interconnection between the rubber molecules within the rubber-asphalt mix), in spite of the relatively small amount of rubber used (not more than 5%, and usually around 1½%).

Though the "mechanism" is not known exactly, the result of mixing neoprene with asphalt can be measured accurately. The NMA material, compared to straight asphalt, has a higher softening temperature, less tendency for the asphalt to strip from the aggregate, better adhesion to the aggregate, less bleed-through (asphalt bleeding through the aggregate, making a slick surface), and longer life.

One user of NMA made a check of a test road after about a year, and reported to Du Pont that there were less than half as many patches in the road as in an adjacent road using conventional asphalt alone.

While NMA roads sometimes cost more than straight asphalt roads, the added expense is not great, and is in line with other types of rubbers being tested with paving asphalt, Williams says.

The cost of neoprene-modified asphalt is about double that of straight asphalt. But since the total asphalt in a road is usually only about 10% of the entire asphalt-aggregate mix, the total laid-down cost of a NMA road is, at the most, 20% higher than a conventional asphalt road, according to Du Pont figures, which also show increases up to 100% in road life.

Neoprene is more expensive than the other rubbers being tested for asphalt use. However, the cost differential disappears, Williams says, because 1½% neoprene in asphalt gives about the same performance as 3% of the competitive rubbers in asphalt.

The neoprene can be added to the asphalt either as a powder or as a liquid latex.

Du Pont's first rubber-asphalt work was with neoprene powder. However, the powder costs more than liquid neoprene latex (58¢ a lb. versus 40¢ a lb.), and is only about 90% as effective as the latex.

Addition of the latex to the asphalt is best done at the refinery or terminal, to insure consistent mixing.

In spite of "apparent" advantages for rubberized asphalt, much skepticism will have to be overcome before it is widely accepted.

Various attitudes are met in talking to people about the use of neoprene in asphalt, Williams says. Some producers of asphalt tend to feel that asphalt needs no additives.

However, highway officials, whose needs and specifications ultimately control the qualities and types of asphalts made, are relatively open-minded, and are willing to experiment.

Roads offer the biggest market potential for NMA, but the laminated-paper industry is also experimenting with it.

Asphalt specialties (including paper lamination) account for only about 10% of the total asphalt market, compared to about 70% for paving and 20% for roofing. However, problems encountered in making a temperature-insensitive, laminated paper may make this industry a big user of NMA.

Straight asphalt tends to crack at a temperature of about 10F, thereby losing its resistance to moisture transmission. NMA, on the other hand, does not crack even at temperatures as low as —30F, according to Du Pont tests.

What Neoprene-Asphalt Roads Cost in New Jersey

	RT-10 Road Tar	CERC-3 Inverted Asphalt Emulsion	RS-2N Modified Asphalt Emulsion	RC-3 1½% Neoprene Modified Asphalt Cutback
Bituminous Materials:				
Application rate, gal./sq. yd.	0.31	0.31	0.31	0.25
Cost per gal., applied	$0.2041	$0.1774	$0.1774	$0.2000
Cost per sq. yd. covered	$0.0633	$0.0550	$0.0585	$0.0500
Cover Material:				
Coverage, lb./sq. yd.	27	27	27	25
Cost of trap rock (⅜-in.)/ton	$7.64	$7.64	$7.64	$7.64
Cost of cover material (applied)/sq. yd.	$0.1031	$0.1031	$0.1031	$0.0955
Total (Asphalt+Cover material)/ sq. yd.	**$0.1664**	**$0.1581**	**$0.1616**	**$0.1455**

Application rates established by Salem County Highway Department
Data: E. I. du Pont de Nemours & Co.

How Neoprene Latex Improves Paving Asphalts

Asphalt Source	Softening Point, °F	Penetration, 77F/100 gm./5 sec.	Flow @ 100F, cm.	Tenacity, In.-lb.	Toughness, In.-lb.
West Texas:					
0% Neoprene	113	74	1.8	5	22
2% Neoprene	121	68	0.6	70	97
3% Neoprene	127	66	0.5	100	133
5% Neoprene	132	61	0.5	148	177
90% Venezuelan (Boscan); 10% Mexican (Panuco):					
0% Neoprene	114	74	1.1	8	28
2% Neoprene	122	60	0.6	118	148
3% Neoprene	126	66	0.3	148	180
5% Neoprene	135	69	0.1	179	214
Venezuelan (Bachaquero and Lagunillas):					
0% Neoprene	113	69	1.3	8	34
2% Neoprene	119	62	0.6	64	100
3% Neoprene	121	67	0.3	79	112
5% Neoprene	Gel	Gel	Gel	Gel	Gel

Data: E. I. du Pont de Nemours & Co.

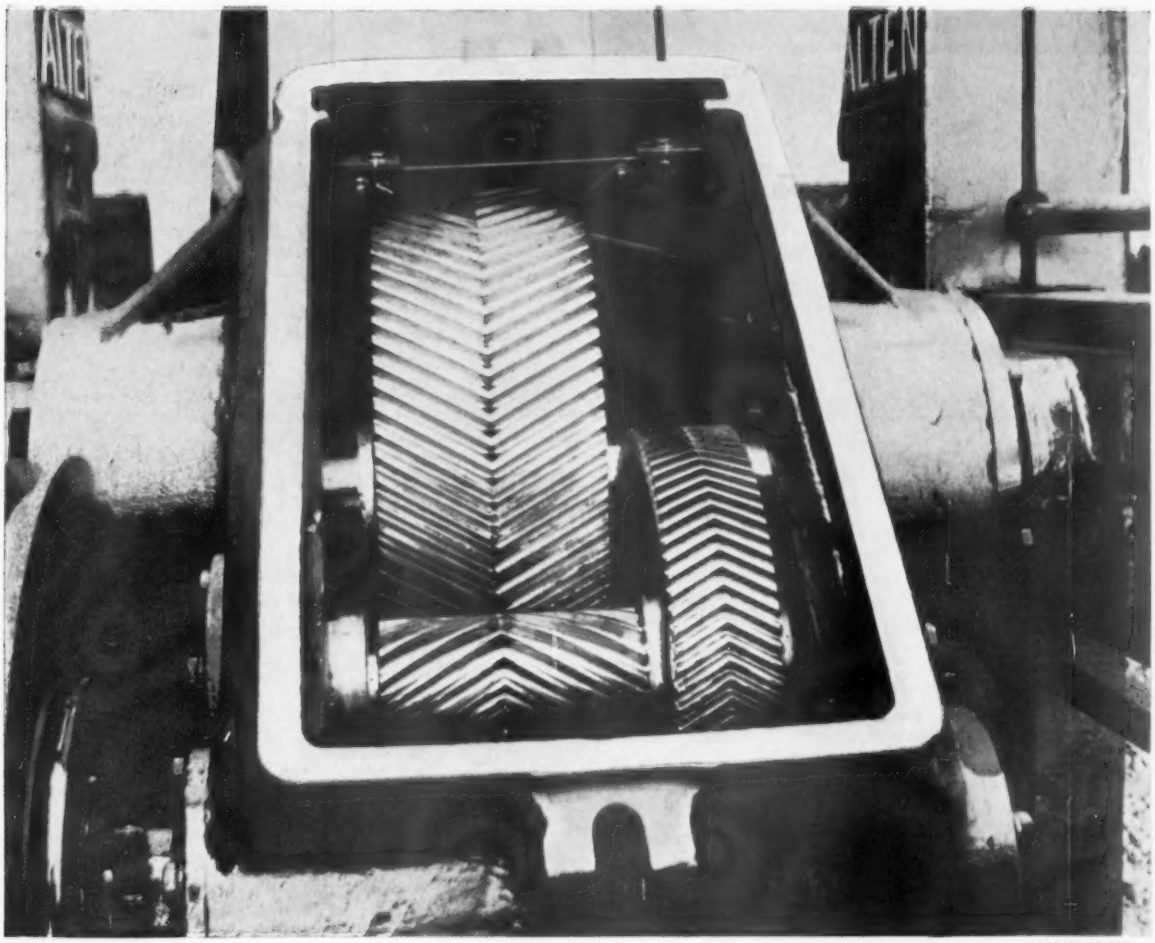


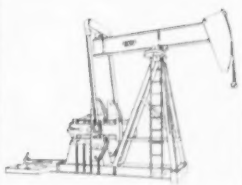
PHOTO BY SPIEGEL

ALTEN . . . most rugged reducer

The Alten pumping unit's gear reducer gives you extra strength where you need it most. Rib-reinforced one-piece housing holds gear train in perfect alignment. Roller type anti-friction bearings have reserve strength to withstand tremendous impact loads. Sykes-machined herringbone gears eliminate side thrust and reduce bearing loads on Alten's larger deep-well units.

Alten's exclusive magnetically operated oil saver system most efficiently returns oil to bearings . . . works equally well for either operating direction . . . continuously cleans and re-cleans every drop of circulating oil.

Isn't this the high quality of design and construction you look for when you buy oil pumping equipment? Save time. Call your Alten dealer first.



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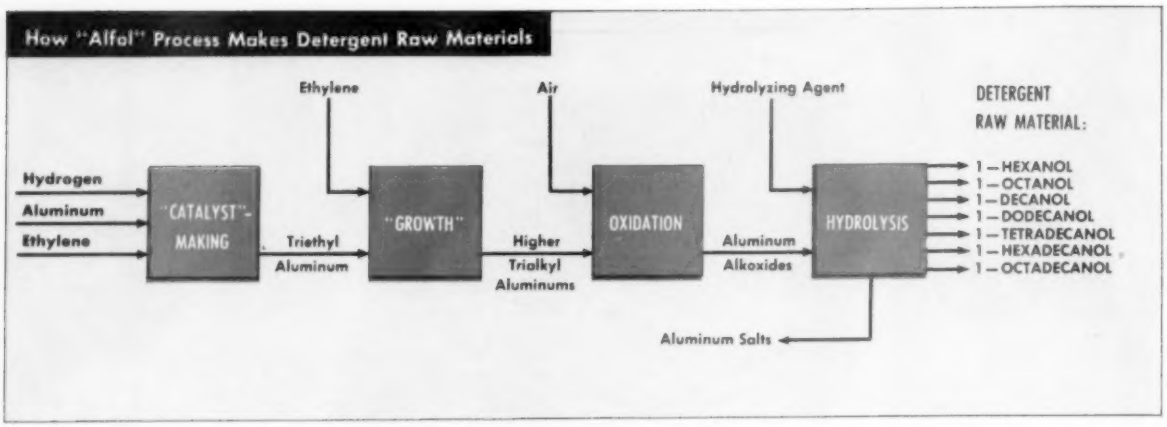

Conoco's Alfol Process Almost Ready

A new "commercial" family of petrochemical alcohols, replacements for so-called "fatty alcohols" in the manufacture of detergents and other products, may be available from Continental Oil Co.'s Alfol process by 1961, according to the company.

Conoco scientists and engineers have had the Alfol process under development for nearly five years. Pilot-plant work is well on the way to completion, and the commercial-scale plant design will be finished shortly.

The present schedule calls for this plant to be completed and ready for operation by 1961, according to Dr. George E. Hinds, director of market development for Conoco's petrochemical department, at the recent annual meeting of the Assn. of American Soap & Glycerine Producers, in New York City.

The Alfol process makes straight-chain primary alcohols by an adaptation of organic-aluminum chemistry used in the Ziegler polyethylene process.

Conoco has been licensed, under the Ziegler patents, to exploit the organic-aluminum chemistry for the manufacture of higher-molecular-weight straight-chain alcohols. Additional patents secured during the development of the Alfol process belong to Conoco.

Raw materials for the process are ethylene, hydrogen, and metallic aluminum. These three materials react, as shown in the flow diagram, to form the starting compound—triethyl aluminum.

More ethylene is then reacted with the triethyl aluminum to form an intermediate "growth" product consisting of higher-molecular-weight trialkyl aluminums. In other words, the hydrocarbon chains attached to the aluminum are caused to grow in length by addition of ethylene to make carbon chains (with even numbers of carbon atoms) up through 18 or more carbon atoms.

The "growth" product is oxidized (an oxygen atom is placed between the aluminum and hydrocarbon chains) to form a mixture of aluminum alkoxides. These are then hydrolyzed to get rid of the aluminum and form a mixture of the desired alcohols.

The alcohols from the Alfol process are the same as the natural straight-chain primary alcohols now derived from fatty acids, which come from a variety of non-petroleum oils and fats.

According to Hinds, the Alfol process is the first to duplicate these natural alcohols by a commercial process using petroleum-derived raw materials.

Conoco believes the economics of the process will make the Alfol alcohols competitive with the natural alcohols for the manufacture of synthetic detergents, lube oil additives, plasticizers, cosmetics, emulsifiers, and paper textile chemicals.

In addition, the process can make alcohols not readily available from natural sources, such as 1-tetradecanol.

Work is continuing on the process, however, to find better ways to control the selectivity with which a specific, desired alcohol can be made.

The product from the present Alfol process is a mixture of alcohols ranging from 6 carbons (1-hexanol) up to 18 carbons (1-octadecanol) and even higher. The composition of this mixture can be controlled to some extent by changing reaction conditions. However, it is not yet possible to produce just one or two selected alcohols by the Alfol process, Hinds says.

What's New / IN PROCESSING

Sunray Mid-Continent Oil Co. has started construction of an automatic gas products plant 16 mi. northeast of Port Lavaca, Jackson County, Tex.

The plant will use a combination of refrigeration and oil-absorption techniques. It will cost an estimated $600,000, and will process 30-million cu. ft. a day of gas from the nearby Appling and Olivia fields. Liquid product from the plant will be 27,000 gal. a day of propane, isobutane, normal butane, and natural gasoline. These will be sold as a composite stream by pipeline.

The plant will operate around the clock, manned by four men during daylight hours and unattended at night.

•

Work is under way on Shell Oil Co.'s gas liquids recovery plant 10 mi. northeast of McComb, Miss.

The plant is designed to process all the gas from the Little Creek field, located in Pike and Lincoln Counties, Miss. An estimated 15,000 gal. a day of natural gasoline and propane will be recovered. The cost of the plant will

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For the progressive refiner, any new process that may improve his economic position is worth looking into—regardless of where the basic idea originated.

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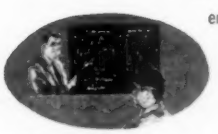

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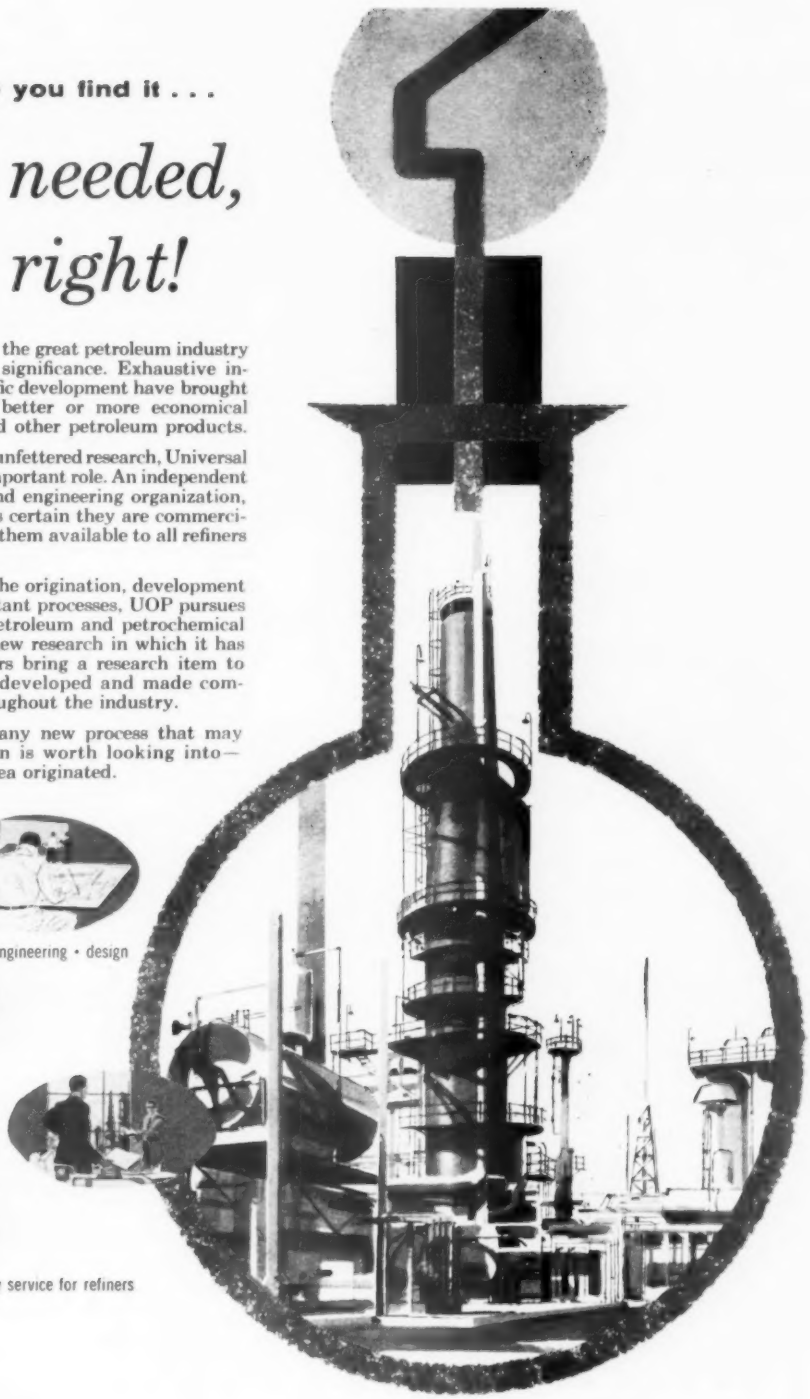

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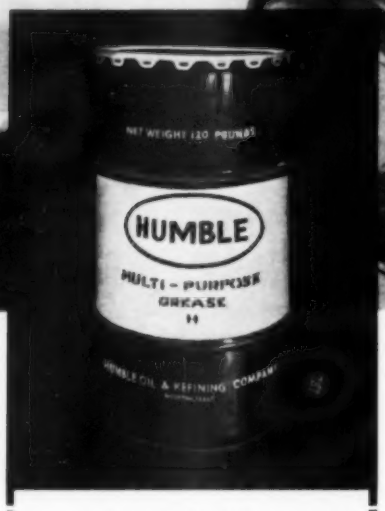

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be $1-million. It will process 5-million cu. ft. a day of wet gas, with provision for doubling the capacity.

•

Stauffer-Aerojet Chemical Co., owned jointly by Stauffer Chemical Co. and Aerojet-General Corp., will produce high-energy boron fuels for the Air Force.

The contract provides $2-million for the design, construction, and operation of a large pilot plant now being built on Aerojet's 20,000-acre facility near Sacramento, Calif. The process to be used for the liquid fuels was developed by Stauffer-Aerojet, and is expected to reduce the production cost of boron fuels considerably, according to company statements.

•

Commonwealth Oil Refining Co.'s Guayanilla Bay (Puerto Rico) refinery had its first profitable quarter since it began operations in 1956.

Roy J. Diwoky, president of the company, attributed the good fourth-quarter, 1958, showing to improved mechanical operations at the refinery.

For the full year 1958, 18,872,000 bbl. of crude were processed, giving gross revenues of $60,968,000 and a net loss of $2,673,000. However, during the fourth quarter, when 4,985,000 bbl. were processed, gross revenues were $15,986,000, with a net profit of $161,000.

•

Western Natural Gas Co. has acquired the Brownsville (Tex.) refinery formerly owned by McBride Oil & Gas Corp.

The refinery is being rehabilitated, and will have an initial capacity of about 3,500 b/d. This capacity can be increased to 5,000 b/d with a comparatively small capital outlay, according to Western Natural.

The company plans to produce asphalt and related products, and kerosine and diesel fuel. Feedstock will be heavy Venezuelan crude, and distillate and other products extracted from natural gas. As a part of this program, the company plans to build three small gasoline plants in Texas.

•

Firestone Tire & Rubber Co. plans to build the world's first plant for the production of synthetic Diene and Coral rubbers.

Both of these rubbers are Firestone products. Diene rubber (made from butadiene) is a partial replacement for natural rubber, and Coral rubber (made from isoprene) is a complete replacement for natural rubber.

The new plant will be located at Orange, Tex. Its annual capacity will be 30,000 tons of either product—depending on demand.

•

The American Society for Testing Materials will organize a new division on Materials Sciences, to coordinate and intensify the development of knowledge of the fundamentals of materials.

The new division, the first of any kind to be established by ASTM, will concern itself with the collection, establishment, and publication of basic information essential in creating a better understanding of materials and their properties—and especially will help to answer "why" materials are what they are.

•

Polymer Corp., Ltd., Canadian-government-owned chemicals company, is planning to start building a butadiene plant this year in Alberta, according to a report by E. R. Rowzee, president and managing director of the company.

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Alberta Gas Line to Help Feed U.S.

Canadian pipeliners are already setting down the Alberta path Western Canadian natural gas will follow on its way to the U.S. and California —even though neither country has as yet approved the international gas flow.

Details of the proposed system, which would take gas from Alberta fields to southern Alberta for delivery to two exporting companies there, are now before the Alberta Oil & Gas Conservation Board.

The commission recently completed hearings on the revised applications of the exporting companies—Westcoast Transmission Co., Ltd., and Alberta & Southern Gas Co., Ltd.—which asked for permission to export to the U.S. some 6-trillion cu. ft. of gas over the next 25 years. Hearings on the intra-Alberta "feeder" system should be completed soon.

Alberta Gas Trunk Line Co., Ltd., now plans a 386-mi. big-inch transmission system, which would take gas from fields as far north as the Berland River area for delivery to exporters in southern Alberta.

Alberta Gas Trunk Line is a fast-growing 1½-year-old company, which began operations mainly as a gas gathering system for the Trans-Canada line, but is now seeking to make it big as a large-scale gas transmission company on its own.

The most ambitious of its expansion plans is the $97-million "Foothills System," which would provide the gas for export to the U.S.

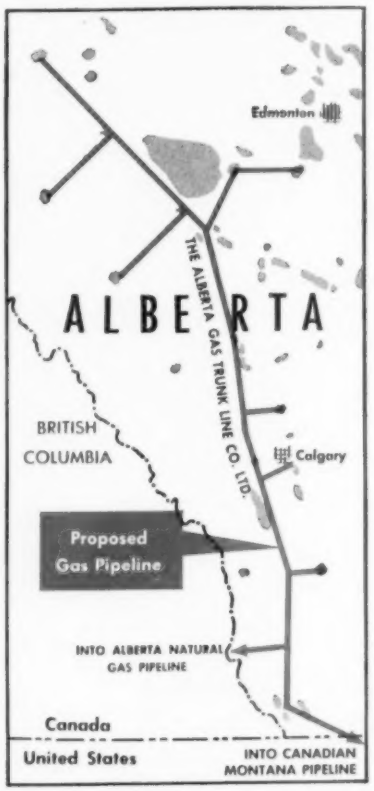
The mainline, starting at the Berland River field in northwest Alberta, would parallel the Rocky Mountain foothills all the way down to the Castle River field, in the southwestern part of the province.

Just north of the Castle River field, at what Alberta Trunk calls the Savanna Creek tap, the company would deliver up to 632.6-million cu. ft. of gas daily to Alberta Natural Gas Co., the jointly-owned subsidiary of Westcoast and Alberta & Southern which would carry the gas in the 100-mi., big-inch line it plans to build to the U.S. border (PW—Oct.24'58,p40).

The Foothills system would also be used to deliver up to 30.7-million cf/d to Canadian-Montana Pipe Line Co., just south of the Castle River field.

And communities along the Foothills mainline would also be able to draw gas from the system.

The mainline would have a diameter of 26 in. for 55 mi. south of Berland River; 30 in. for the next 75 mi., between the Lovett River field lateral and the Stolberg field lateral; and 36 in. for the rest of the way—256 mi.—to the Castle River field.



In addition, Alberta Trunk Line proposes to build some 241 mi. of lateral lines between 8⅝ in. and 16 in. in diameter.

These laterals would tap, in addition to the Berland River field, the following fields: Whitecourt area, Lovett River, Stolberg, Minnehik-Buck Lake, Dick Lake (Westerose South), Crossfield, East Calgary, Pine Coulee-Parkland, Waterton, Castle River, and Savanna Creek.

The line will need no compressor stations as it is now planned. Says Alberta Trunk Line: "Gas will be received from sellers at pressures of 900 psi. Compression will not be required at these flows."

Alberta Trunk Line feels it could have the system in operation by the fall of 1960. Using four pipeline spreads, it would begin work in July of this year, with the goal of building 255 mi. of mainline and 115 mi. of laterals by the end of the year.

In 1960, the company would build 131 mi. of mainline, 126 mi. of laterals, and all auxiliary facilities.

Canadian Bechtel, Ltd., has worked with Alberta Trunk in studying and designing the line.

One reason for the optimistic construction schedule: a surprisingly small amount of difficult terrain.

Alberta told the board that "no unusual construction problems will be encountered on the proposed route. . .

"It is estimated that, in the entire 386 mi. of main trunk line, there will be less than 10 mi. of trench excavated in rock, and possibly 30 mi. excavated in boulders and loose rock.

"There is very little ground cover in the southern reaches of the line, and, in the north, the cover ranges from scattered brush to strands of medium-sized timber."

However, the company points out that there will be a few rough spots:

"In the Crowsnest Pass area, in the south of the system, there are approximately 14 mi. of rough, rocky terrain to be crossed. And in the north, the main trunk of the system will traverse as much as 45 mi. of wet ground, where weights will be required to keep the large-diameter pipe in place."

The main trunk will also have 6 railroad and 18 highway crossings, where the pipe will have to be cased. And it will also have to make 18 river crossings and about 35 stream and creek crossings.

The need for all kinds of regulatory-body approval for the project may well prove a far more formidable obstacle.

First of all, the Alberta Trunk Line project depends on the approval of the gas export permits Westcoast and Alberta & Southern now have before The Alberta Oil & Gas Board. Then the Canadian federal government must give its blessing to the gas export proposal, and the U.S. Federal Power Commission must also O.K. the proposition.

Then Alberta Trunk's proposal to supply the gas for this export must come under consideration.

It now seems likely that the entire project will get all the necessary approvals. But it is hardly likely that this will take place in time for Alberta Trunk to get started on its system by July. By the time it does get started, several changes in the system—especially in its cost—may be necessary.

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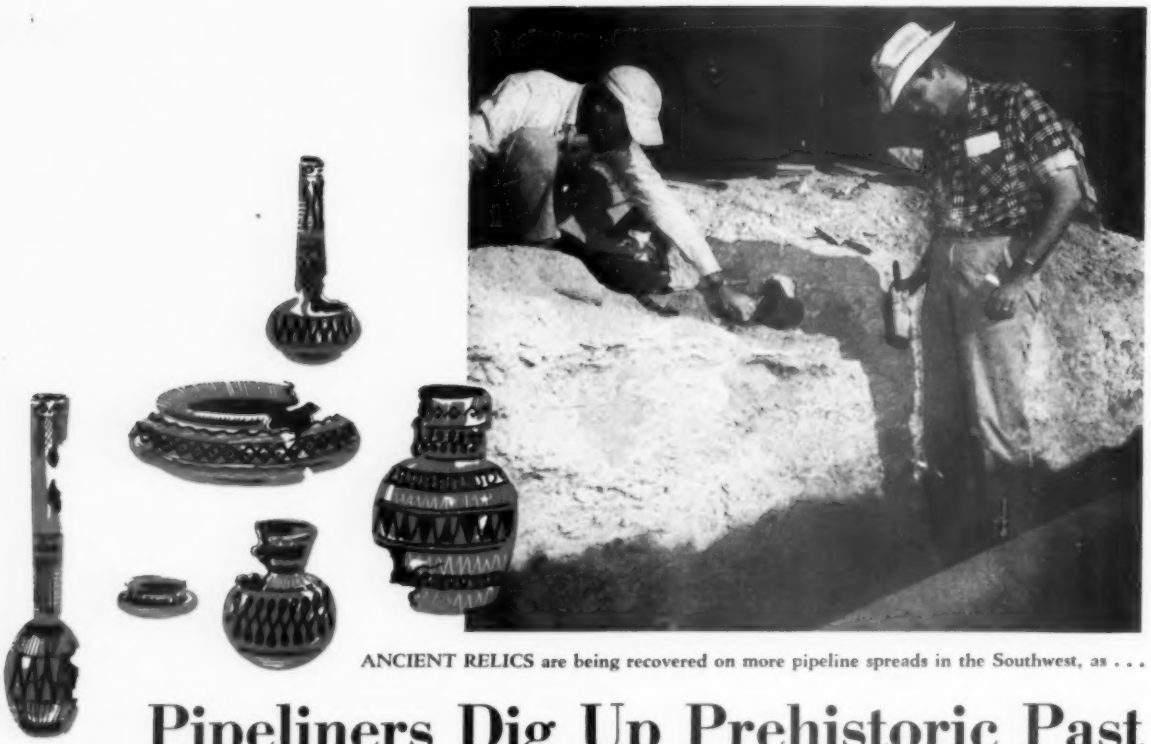


ANCIENT RELICS are being recovered on more pipeline spreads in the Southwest, as . . .

Pipeliners Dig Up Prehistoric Past

Southwestern pipeliners are becoming increasingly involved in a new—or rather old—field, archeology.

The southwestern flatlands, it seems, were the home of many an Indian tribe dating back to prehistoric days. The elements, however, have in many cases conspired to hide evidence of these early inhabitants below the present earth surface.

Now archeologists are taking advantage of the opportunity offered by pipeline construction projects, which afford the scientists a "quick peek" at what lies below. And more and more pipeline companies are cooperating in such work.

Dr. Jesse Nusbaum, founder of this "pipeline archeology" says that, with the help of pipeline companies, some 1,500 additional miles of pipeline right of way will be studied this year for relics of the long-dead past.

Nusbaum, of Santa Fe, N. M., is the twice-retired, twice-recalled consulting archeologist for the Interior Dept., who, as the acknowledged pioneer in pipeline archeology, can't stay retired because he is the only one of his kind.

Nusbaum began his work on pipelines in 1950, when he convinced El Paso Natural Gas Co. that it should take pains to safeguard archeological finds in the construction of its then-planned line across the Navajo Indian Reservation, in New Mexico.

Nusbaum whipped up a team of five archeologists, moved out along the El Paso right of way, and pipeline archeology was born.

Since then, Nusbaum's crews—he's employed a total of 39 archeologists so far—have worked along the rights of way of virtually every major pipeline built in the Southwest.

Nusbaum says his archeologists have covered 6,665 mi. of pipeline right of way since 1950, and have rescued the archeological values of 1,315 sites that would otherwise have been destroyed.

This year, he plans to work his teams on the proposed Transwestern Pipeline Co. gas system from West Texas and the Four Corners area to California; on the proposed twin systems of El Paso and Colorado Interstate which would take gas from Rock Springs, Wyo., to the California-Nevada border near Las Vegas; and on El Paso's 175-mi. looping project.

Nusbaum also has a commitment to do archeological research on the proposed Pacific Gas & Electric Co. main transmission system, which would stretch 1,300 mi. from northern Alberta to the San Francisco area.

However, chances are slight that construction will begin on this one before 1960.

Pipeline archeologists search rights of way before clearing begins, and again immediately after trenching.

Here's how Nusbaum recently outlined his technique to PETROLEUM WEEK:

In the first stage—the prebulldozer phase—the archeologists work in pairs. While one walks the right of way looking for evidence of some ancient deposit, his partner drives a jeep about a mile ahead, parks, and begins his mile-long search as a pedestrian. When the first walker reaches the jeep, the procedure is repeated.

In this way, the archeologist can cover up to 12 mi. a day.

In the second phase, the archeologists move along ditchside, following immediately after the trencher. They examine the profiles of the ditch wall, looking again for any evidence of prehistoric deposits. Many times such deposits are found 30 in. or even 40 in. below the earth's surface.

If the deposits are potentially significant, excavation is carried out.

Cost of this excavation, like the cost of the entire archeological function, is usually borne by the pipeline company.

Nusbaum says proudly that his crews "have never yet delayed construction on a line."

He contends that this is no mean trick either, what with the tightness of today's laying schedules.

It's a standing joke in the archeologists' camp that if they don't get what they came for in a hurry, they'll become archeological material themselves—courtesy of ditch padders.

What's New / IN TRANSPORTATION AND STORAGE

The Federal Power Commission was busy last week approving several gas-transmission system expansions.

• Michigan Wisconsin Pipe Line Co. received FPC authorization to build a $31-million line from Oklahoma's Lavern Field to the company's Michigan customers. The line will roughly parallel an existing Michigan Wisconsin line through Kansas, Missouri, Iowa, Illinois, and Wisconsin into Michigan.

It will carry up to 80 million cu. ft. of gas daily.

• Tennessee Gas Transmission Co. received a permanent certificate from FPC to build and operate $165-million worth of new facilities that will boost its system delivery capacity by 406-million cf/d. The expansion is already under way.

• United Gas Pipe Line Co. won FPC approval to build $1.5-million worth of new facilities along its main line in order to supply more gas for industrial customers. But FPC ruled that none of the additional gas can be used as boiler fuel in generating electricity without re-application.

•

Petroleum product tariffs on the Little Inch pipeline are being reduced effective Mar. 1.

Texas Eastern Transmission Corp., operator of the Little Inch system, has announced that the new rates into Chicago from Beaumont will be 40¢ per bbl. on gasoline and 44¢ per bbl. on distillates. This compares with the present rate of 48¢ per bbl. for both products.

Comparable reductions are also being provided for shipments to other destinations along the line.

Texas Eastern says that it will soon reduce the tariff on LPG moved in the system.

•

World tanker tonnage rose by 3.6-million tons in 1958, to 33.6-million tons, according to the latest Lloyds of London register of shipping statistics.

The report says that the British flag still flies over the largest tanker fleet: Britain has 5.9-million tanker tons in its registry. Liberia (5.6-million tons), Norway (5.3-million tons), and the United States (4.1-million tons) are next in tanker registry.

Liberia, however, is making a strong bid to unseat Britain from the top spot. Last year the Liberian tanker fleet had the greatest rate of gain, adding 1.5-million tons.

•

The Trans-Canada natural gas pipeline may be looped much sooner than expected, and perhaps even as early as next year.

Trans-Canada officials said recently that, although original plans did not call for looping the line for about ten years, Eastern Canada's natural gas demand has been so great that preliminary work on looping may even begin this year.

•

Saskatchewan's north and south natural gas transmission systems will be linked by a 10-in. connecting line to be built this year in the western part of the province, near the Alberta border.

The 76-mi. connecting line, to be built by Saskatchewan Power Corp., will run from Rosetown to Success. The line will link the system serving Saskatoon and Prince Albert in the north to the much larger system serving Swift Current, Moose Jaw, Regina, and Weyburn in the south.

•

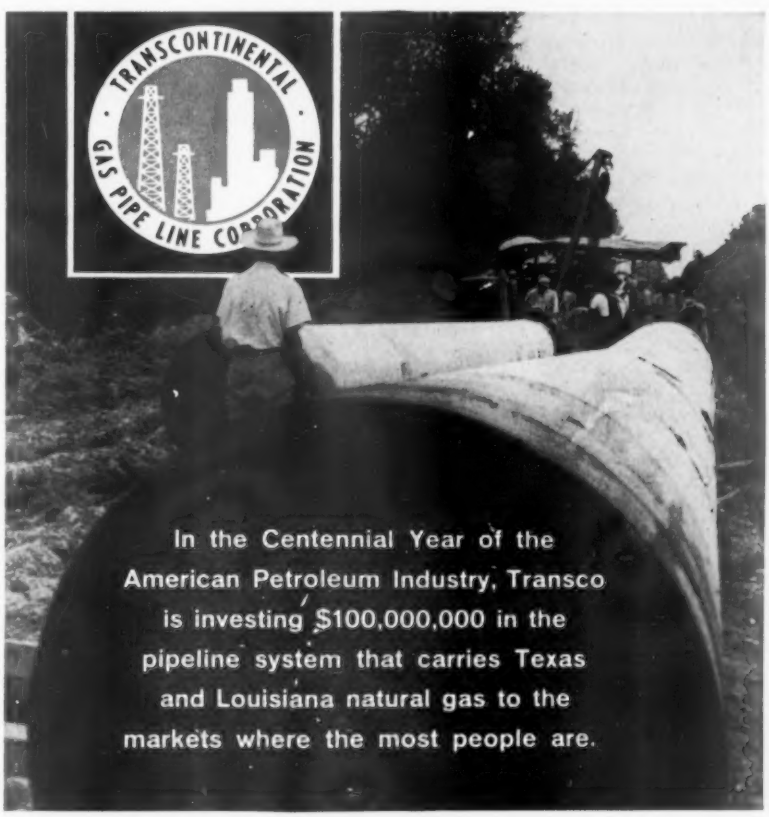
Engineering

Caterpillar Tractor Co. is introducing a new line of equipment for pipeline construction.

Caterpillar says its new Series H No. 583 pipelayer offers pipeline builders "increased lifting capacity and greater horsepower" over earlier models.

The new pipelayer is also faster than predecessor models; it has a top speed of 6.4 mph.

Caterpillar is also introducing two new D8 tractors, both having "increased weight, horsepower, and productive ability over their predecessors," according to the company.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DEPT/International

Pemex Starts 'Housecleaning' Drive

MEXICO CITY—A sweeping clean-up designed to put Mexico's government oil monopoly on a paying basis has started with the firing of an average of 50 persons daily, Petroleos Mexicanos management told PETROLEUM WEEK here last week (PW—Jan.9'59,p40).

The "housecleaning" program, initiated by the new Pemex chief, is the first in the 20-year history of Mexico's nationalized oil industry. It is drawing much attention in Mexico City—skepticism from some, and bitter reaction in some oil union quarters.

The firings that mark the first phase of this program will be continued indefinitely, Pemex officials say. Pemex has some 45,000 employees listed on its books—including 10,000 "temporary" workers. About 25% of its income goes into wages, Pemex says, as compared with the 20% world average for extractive industries.

Pemex figures it will save nearly 20% of its annual $96-million payroll when its staff has been tightened up into a more efficient working force after the firings are completed.

The need for the "purge" is explained by Pemex officials this way: 20 years ago, Pemex got its start as a political baby. Everybody got in on the act who had helped kick out the foreign oil companies. Then, each new Mexican president added his own people to Pemex. Political bosses and labor leaders had to be appeased. The pile of "advisors," "special workers," "consultants," etc., mounted, and is now strangling the agency, present Pemex management feels.

The cost of ridding itself of a 20-year accumulated "log jam of dead wood" will come high for Pemex at first.

Severance pay will have to be paid to most of those fired, even though many are what Mexican slang tags as "aviadores." These "aviators" are workers who get government jobs through political pull, and only "fly in" to the office once a month to pick up their pay checks.

Pemex claims it will be cheaper to pay off the departees rather than face thousands of expensive and long-drawn-out legal battles.

For the first time in Pemex's history, past corruption and abuses, such as "selling of jobs," are being publicly condemned in a series of articles stemming from Pemex itself.

Now appearing in local newspapers, the articles are the first frank criticisms Mexicans have seen of their national oil company. They are written by Antonio Vargas MacDonald, Pemex public relations chief. Like Pascual Gutierrez Roldan, the new head of Pemex, Vargas was appointed by Mexico's new president, Adolfo Lopez Mateos.

Pemex officials see two further tough fights ahead: for cleanup of graft in purchasing and contracting, and for further product price hikes.

The spoils system, they say, has reigned for many years in Pemex purchasing and contracting.

The question of product prices has long been an extremely sensitive political issue. The first increases were pushed through for gasoline and diesel fuel late last year by the outgoing regime, and strongly defended against ensuing attacks by the new Pemex chief. Prices were doubled on other products this month—a move that is bound to stir new protests.

French Oil Industry Sets Records

PARIS—The French oil industry is gearing for a big increase on all fronts this year, after breaking all previous production and exploration records in 1958.

It is now embarking on an energetic program designed to develop known fields in record time and to find new ones. Its goals for 1959 also include:

- Near-doubling of production, to 80,000 b/d from last year's record 48,000 b/d, which marked a 44% jump over 1957;
- Completion of the 24-in. pipeline outlet to the Mediterranean from the Hassi Messaoud field in the Sahara;
- A good start on the 24-in. line through Tunisia from the Edjele oil area, also in the Sahara, near the Libya border.

All this will cost over $500-million in 1959, but the return is expected to be big, says the government's Bureau de Recherches de Petrole.

Expected production of 370,000 b/d in 1961 and 450,000 b/d in 1963 from already-known fields alone will, the bureau feels, put the French Community on the oil map.

Investments in the French oil industry increased 60% last year to $440-million, according to BRP's annual report, published last week.

Of the total, $170-million went into exploration, $80-million into development, and $110-million into purchases of oilfield and pipeline equipment.

Drilling in France and African territories increased 50% last year to nearly 2½-million ft., in a total of 434 holes.

Included were 204 development wells, and 230 wildcats and stratigraphic tests. The results: 158 oil producers; 23 gas wells; and 253 dry holes.

By area, the BRP report shows:

- **In Metropolitan France, 1,095,800 ft. were drilled,** up from 757,871 ft. in 1957. The 180 holes included 42 development wells and 138 wildcats and strat tests. The results: 34 oil wells, 11 gas wells, 135 dry holes.

- **In the French Sahara, 748,033 ft. were drilled,** almost double the 377,294 ft. in 1957. Of 118 holes, 81 were development wells and 37 wildcats and strat tests. The score: 68 oil producers, 11 gas wells, 39 dry.

- **In African territories of the French Community, 544,615 ft. were drilled,** up from 363,000 ft. in 1957. Most of this—445,500 ft.—was drilled in Gabon and the French Congo (PW—Jan.30'59,p36).

Of the 115 holes drilled in the territories—which also include Cameroun, Senegal, Ivory Coast, and Madagascar—72 were development wells and 43 wildcat and strat tests. The score: 50 oil producers, 65 dry holes.

- **In North Africa, the only area to show a decline, 104,987 ft. were drilled** in Morocco and Tunisia, about 10% below 1957. Activity in Algeria was virtually suspended by the continuing rebel war against French forces.

Of 21 holes, nine were development wells and 12 wildcats and strat tests. The results: 6 oil wells, 1 gas well, and 14 dry holes.

BRP reports that the 60 heavy rigs in operation are still inadequate in number, though total rigs were up to 133 by the end of 1958, from 104 in 1957. These include 49 medium and

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OVERSEAS ENGINEERING AND CONSTRUCTION SERVICES

24 light rigs. Drilling contractors own 85 of the total, and the oil companies the rest.

By the end of 1958, 42 companies held French exploration permits, either alone or in association with others.

Of these, 24 are entirely French, 6 entirely foreign, and 12 have varying amounts of foreign capital.

The French government holds an interest in 26 of the 42 and controls 15.

Acreage held under permits totals 511,660 sq. mi. including 33 new grants made during 1958. The total includes 76,370 sq. mi. in Metropolitan France; 293,124 sq. mi. in North Africa and the Sahara; and 142,166 sq. mi. in other French African territories.

The government put up $75-million, or less than 30% of the new oil capital raised by the industry last year, a decline from 38% in 1957 and 67% in 1956.

Capital from stockholders and associated companies amounted to $243-million, including the government's $75-million contribution. Borrowings provided $78.5-million, and sales of oil and gas another $78-million.

Sudan Adopts New Oil Law

The Sudan has adopted an unusual new oil law, under which the government will get 50% to 70% of net profits—entirely in royalties.

A bill called The Petroleum Resources Development Act was recently approved by the Prime Minister, and is apparently already in force.

According to a version of the text that became available in oil circles last week, the law provides that all payments will be in the form of royalties plus rentals, and not income taxes.

On first analysis, oil men say such a high royalty would kill all interest for U.S. companies, since they would have no valid tax deductions for operations in Sudan.

The minimum royalty payment on production will be the equivalent of 50% of net profits in the first ten years of a 30-year development lease, which can be extended for another 30 years.

The royalty is to be calculated initially at the rate of 15% on the wellhead value of all crude oil and natural gas produced. But the final royalty payable for any one year will be 50% of net profits for that year.

Any time after the tenth year of the lease, the royalty may be increased to the equivalent of a maximum of 70% of net profits by a government petroleum committee set up by the new law.

Other major features include:

- **Exploration licenses:** 800 sq. km. maximum, in rectangular form. Originally, these will be granted on application from qualified firms. But licenses that lapse subsequently will be subject to competitive bidding, with bonuses.
- **Exploration period:** Four years, with two two-year extensions. If a discovery is made, another four-year extension is permissible from the discovery date to permit defining the field.
- **Development leases:** 250 sq. km. maximum, in rectangular form. The area may be extended by the government.
- **Sudanese employment:** Companies may be required by the Minister of Natural Resources to employ Sudanese at all levels, and to arrange for their training.
- **Sudanese capital:** Holders of development leases may be required to permit up to 30% Sudanese participation in all classes of capital stock and debentures for the Sudan oil operations, whether or not issued in the Sudan.

New Kuwait Field Will Flow by Summer

Kuwait Oil Co.'s big new northern field at Raudhatain will start flowing by this summer, when production facilities will be complete.

The company, owned jointly by Gulf Oil and British Petroleum, said last week that new storage and loading facilities are nearing completion at the oil port, Mina al Ahmadi.

Construction is now at the half-way mark on the 30-in. pipeline running 80 mi. from Raudhatain to the Ahmadi tank farm. Eight new tanks have already been built out of a planned 15, with 3.9-million bbl. capacity.

A new oil loading pier is also nearing completion at Mina al Ahmadi, 4 mi. north of the existing south pier. The latter will be linked with the new tank farm by three new 38-40-in. pipelines. The new pier will accommodate five tankers, and will have a loading rate of 50,000 bbl. an hour.

What's New

U.S. Role in Brazil's Bolivian Deal Dimmed

BRAZIL—The outlook was again clouded last week for the deals made with U.S. firms for participation in Brazil's Bolivian oil exploration plans (PW—Jan.30'59,p38).

The final report of a Brazilian congressional inquiry committee condemned foreign participation as such, while agreeing to foreign financing that would have no stake in results of the ventures. This is contrary to the basic position of the Development Bank, which issued a long statement on the question after students rioted in Rio de Janeiro against the bank's recommendations.

The committee's report is now being submitted for approval of Congress and consideration of the executive branch. Neither is obligated to follow the recommendations.

Action must be taken soon, since the Bolivian government also must approve the Brazilian plans before the Brazilian rights in Bolivia expire on Sept. 29.

•

IRAN—Iran's plans to build a 500,000-ton tanker fleet are past the first lap: Orders for two 53,000-ton vessels have been placed in France. The first of two 33,500-ton Dutch-built tankers has already been delivered. The second is due for delivery at mid-year. The latter two have been chartered by Shell (five years) and British Petroleum Co. (ten years).

•

PERU—Nine producers have now been completed at the Maquia field, the first established in Eastern Peru since 1938, when the Ganso Azul field was discovered by a Texas Gulf Producing Co. affiliate.

The latest Maquia well produced over 300 bbl. of crude on 24-hour test through 4-mm. choke. The field was discovered two years ago by Cia. Peruana de Petroleo "El Oriente," a local company associated with three German independents.

•

PERU—After drilling one dry hole, Texas Petroleum Co. is giving up the ⅔ interest it acquired last year in

AROUND THE WORLD

the Yurimaguas concession in Eastern Peru (PW—Feb.7'58,p49).

The wildcat, abandoned in October at 7,591 ft., was the fourth dry hole drilled in Eastern Peru's jungles by the Texaco affiliate (PW—Nov.7'58, p108). The first three were on wholly-owned concessions.

•

MOROCCO—The government's share in Soc. Cherifienne des Petroles—Morocco's only producing company—will be increased to 50% from the present 45%, under a pact signed last week with the French government's Bureau de Recherches de Petrole.

A Moroccan will now be president of the company, whose output last year averaged 1,500 b/d.

•

AUSTRALIA—Gulf Oil and Carl M. Loeb, Rhoades & Co. last week applied for oil rights in Australia—both in the Northern Territory. Gulf is expected to get 33,500 sq. mi. Loeb, Rhoades, New York investment house, has joined Ian Potter & Co., Australian brokerage house, to form Trans-Pacific Petroleum Exploration Co., which has applied for 9,000 sq. mi.

•

COSTA RICA—A new structure midway between the ports of Limon and Puerto Viejo will be tested in April by Union Oil Co. of California, the company said here last week.

Union's Cia. Petrolero de Costa Rica has been doing extensive seismic work since drilling was halted a year ago. Gulf Oil Corp. last year acquired 50% interest in its concession.

•

AUSTRIA—Oil output in 1958 continued its three-year decline to 56,700 b/d, from 63,700 b/d in 1957. Almost 94% of the crude was produced by the state oil unit. A joint Socony-Shell company accounted for 4%.

•

NEW ZEALAND—The first post-war wildcat was spudded last week on the west coast of North Island by Shell, operator for its joint venture with British Petroleum Co. and Todd Oil Services, of Australia.

The test, slated for 12,000 ft., is being drilled with an Ideal 100 rig at Kapuni, in Taranaki province.

•

FRENCH SAHARA—The 24-in. line to the Mediterranean from Hassi Messaoud field is now slated for completion by the end of June. Initial 80,000 b/d throughput will start by October, increasing to 280,000 b/d by the end of 1960.

Greater military protection has been asked, since officials fear rebels might try to destroy the line.

•

INDIA—An ambitious $840-million oil development program is proposed by the government's Oil & Natural Gas Commission (PW—Dec.5'58, p60).

An oil production target of 200,000 b/d is set for 1966. The investment is proposed for India's Third Plan period, 1961-66. It is greater than the total of $630-million earmarked for both oil and mining in the first outline of the plan.

•

PHILIPPINES—Shell's long-planned 25,000 b/d refinery on Luzon will be built by a new affiliate with 25% Filipino participation.

Shell says the $19-million plant will be completed in two to three years by the new Shell Refining Co. (Philippines), Inc.

•

ARGENTINA—Union Oil Co. of California plans to start exploratory drilling this spring on the 4-million acres it holds here under a 27-year contract.

Union announced last week it is now putting reflection seismograph crews in the field to supplement its airborne magnetometer work.

•

RUMANIA—Oil output averaged 240,000 b/d in 1958, according to preliminary estimates. Current output is about 220,000 b/d.

•

GERMANY—Crude runs to West German refineries are expected to jump 30% this year to close to 400,000 b/d, after a 26% rise last year to 302,600 b/d. Imported crude in 1958 accounted for 240,800 b/d, compared with 161,800 b/d in 1957, when total runs were 240,800 b/d.

•

AUSTRALIA — Standard-Vacuum, Union Carbide, and some Australian interests will participate in a new $50-million petrochemical industry, to be set up near Melbourne.

Construction will start almost immediately on four separate plants, which are expected to be in production by mid-1961.

Output will include polyethylene, polystyrene, and GRS synthetic rubber.

•

VENEZUELA—Mene Grande Oil Co. has given up four "obligatory" Colombian border concessions, for which it paid $1.9-million in bonuses in 1956.

No wells were drilled on the tracts, totaling 98,840 acres in Apure state.

•

MEXICO—Four U.S. banks will extend a $40-million loan for five years at 6% interest to finance the 470-mi. gas line that Petroleos Mexicanos has already started building from the Isthmus of Tehuantepec to Mexico City. The banks are Chase Manhattan, Chemical Corn Exchange, Bank of America, and Hanover Bank. The latter is a new addition to the group, with which negotiations were started last year (PW—Jun.27'58,p54).

•

SOMALILAND—The first traces of oil in Somaliland have been encountered in Standard-Vacuum's first wildcat in Africa. Shows above 3,450 ft. in the No. 1 Dagah Shabell proved noncommercial, and the test, about 30 mi. south of Berbera, is now being drilled to a greater depth (PW—Oct. 3'58,p70).

Record Oil Producer?

The Iranian Consortium thinks a recent well brought in at Agha Jari field may prove to be "one of the most productive ever completed" in Iran.

It announced last week that AJ-53, completed from 6,832 ft., flowed at a rate of 40,000 b/d on test. This, the company said, indicates potential yield of "upwards of 50,000 b/d" when the well is put into production.

DEPT/Personals

GEORGE S. BUCHANAN has been elected to the newly created position of senior vice-president of Husky Oil Co., Cody, Wyo. He was formerly vice-president in charge of production. In his new position, Buchanan will continue to direct Husky's exploration program, and will also be responsible for the company's new-reserves acquisition program. In addition, he will direct the foreign exploration of Husky's subsidiaries. At the same time **M. R. McArthur,** executive vice-president, was given additional responsibility as head of the oil and gas production department. **James C. Gilbert,** formerly assistant to the vice-president, has been named manager of appraisals and economics. **Roland F. Cowley,** formerly acting district production clerk at Cody, has been named administrative analyst in the office of the president.

G. S. Buchanan S. D. Breitweiser

STANLEY D. BREITWEISER has been elected executive vice-president of marketing for D-X Sunray Oil Co., Tulsa. **Harry A. Brown** and **J. Paul Greve** have been named D-X Sunray directors. Breitweiser joined D-X Sunray as a vice-president in 1957. Brown, with the company since 1956, is vice-president of manufacturing, and Greve is assistant general counsel for Sunray Mid-Continent Oil Co., D-X Sunray's parent.

RALPH S. FOWLER, formerly assistant director of the Interior Dept.'s Office of Oil & Gas, has joined Pure Oil Co. as head of a new department for sale and acquisition of foreign crude, with headquarters in New York. The new department's initial job reportedly is to find a market for Venezuelan crude that Pure cannot import under its 5,000 b/d quota. Fowler, a former vice-president of Aramco Overseas Co., will report to **K. A. Covell,** Pure's vice-president in charge of transportation and supply.

WILLIAM A. UNDERWOOD has been promoted from assistant comptroller to comptroller of Standard Oil Co. (Ind.). He succeeds **Martin A. McNulty,** who is retiring. Underwood, with Indiana Standard since 1926, was appointed assistant to the comptroller in 1943, and elected assistant comptroller in 1947.

W. A. Underwood G. F. James

GEORGE F. JAMES has been elected a director of Socony Mobil Oil Co. The comptroller's office will report to him, and he will report to **John F. Seal,** a senior vice-president and director of Socony. James joined the company last year as special assistant to Seal. Before that, he was associated with Standard-Vacuum Oil Co., jointly owned subsidiary of Socony and Standard Oil Co. (N.J.).

RAY O. TRAYLOR has been named to the new position of associate director in the central employee relations department of Standard Oil Co. (Ind.), with offices in Chicago. The central employee relations department now includes the employee-relations staff functions formerly handled in the Chicago general office of the manufacturing, sales, and supply and transportation departments. Traylor was formerly manager of the administrative division in the manufacturing department. **Leroy J. Frodin,** formerly assistant manager of the manufacturing department's administrative division, becomes assistant to the vice-president of the manufacturing department. **John H. Lind,** formerly manager of sales department employee relations, becomes assistant to the vice-president of sales. **R. P. Ivy,** assistant manager, sales employee relations, and **V. M. Clerkin,** sales employee relations advisor, becomes senior staff assistants in central employee relations. **M. J. Casey,** general superintendent for administration and employee relations in the supply and transportation department, also becomes a senior staff assistant in central employee relations. **B. B. Reed, A. J. King,** and **W. L. Hindman,** employee relations supervisors in the supply and transportation department, become staff assistants in central employee relations.

W. J. GOLDSTON president of Goldston Oil Corp., Houston, has been elected president of the Mid-Continent Oil & Gas Assn. He succeeds **Charlton H. Lyons, Sr.,** Lyons & Logan, independent operators in Shreveport. Lyons continues as a director.

M. W. Sublett R. P. Huggins

R. PAUL HUGGINS and **M. W. (Windy) SUBLETT** have joined Permian Oil Co. as Houston crude oil representatives. Huggins, recently retired from Gulf Oil Corp., was elected vice-president of Gulf and of Gulf Refining Co. in 1952. At that time, he was placed in charge of the crude oil department of both companies, in Houston. In 1954, he was transferred to Pittsburgh as head of domestic crude oil and products supply, and in 1957, was assigned as head of foreign products supply. Sublett has been district supervisor in the crude oil purchases and sales department of Sohio Petroleum Co. The district covers Texas, New Mexico, Arkansas, Louisiana, and Mississippi. Before that, he was a Sohio crude oil representative in Ft. Worth, Oklahoma City, and Tulsa. Permian's Houston office will direct the company's activities in the Texas and Louisiana coastal area.

CARL F. STUBBE becomes assistant treasurer and manager of the corporate funds division of Ohio Oil Co., Findlay, Ohio, succeeding **Chester E. English,** who is retiring. Stubbe with Ohio Oil since 1925, was formerly assistant treasurer and supervisor of the banking department. **A. L. Brann,** formerly manager of the loans department, has been appointed assistant treasurer and supervisor of the banking department, which will now include the functions of the loan department and responsibility for security records.

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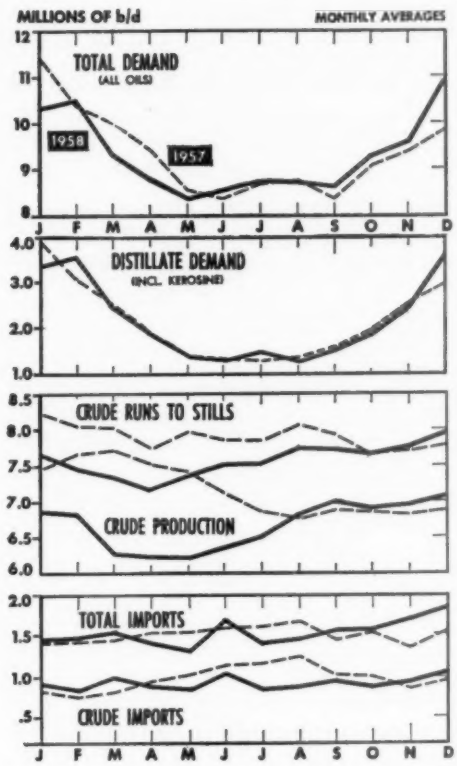
PETROLEUM WEEK'S

Fingertip Figures



Supply-Demand Figures for January

(millions of b/d)

	January 1959	January 1958	% Change
Total Demand (Inc. Exports)	11.192	10.303	+ 8.6
Gasoline	3.754	3.527	+ 6.4
Distillate (Inc. Kerosine)	3.783	3.313	+14.2
Residual	2.010	1.873	+ 7.3
Total Supply	9.739	9.496	+ 2.6
Domestic Crude	7.111	6.865	+ 3.6
Nat. Gas Liquids	.815	.814	+ 0.1
Total Domestic	7.926	7.679	+ 3.2
Crude Imports	.839	1.024	—18.1
Total Imports	1.813	1.817	— 0.2

RUNS TO STILLS

Latest week	8.113
Previous week	8.311
Year ago	7.548

CRUDE PRODUCTION

Latest week	7.107
Previous week	7.194
Year ago	6.842

TOTAL IMPORTS

Latest week	2.023
Previous week	1.567
Year ago	1.779

CRUDE IMPORTS

Latest week	.968
Previous week	.729
Year ago	1.146

Domestic demand for petroleum in January averaged 10.9-million b/d, the highest ever. Total demand, averaging, 11,192,000 b/d, was second only to January, 1957, when exports were at a peak.

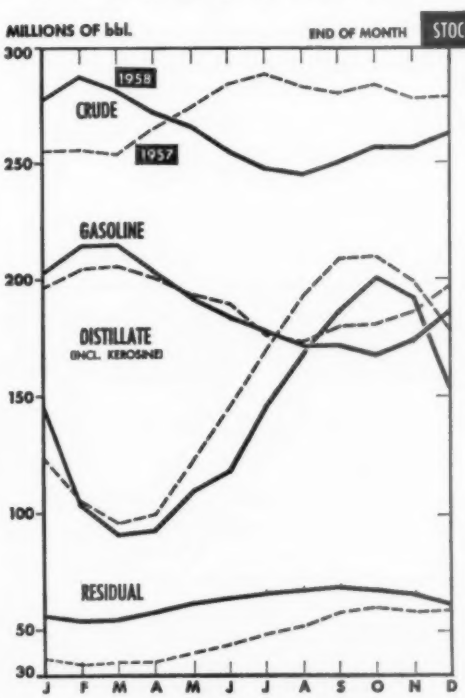
The total movement in January was 8.6% above last year, about in line with earlier expectations.

The burning oils quite naturally paced the January demand, with temperatures over the nation averaging 5% colder than last year and 4% colder than normal, as measured by degree-day count.

Distillates demand ran 14.2% over last year. At the end of the month, inventories of distillates (including kerosine) were 28.7-million bbl. under last year, and the lowest for any Jan. 31 since 1956.

Demand for residual, also indicative of the weather, plus industrial operations, was up 7.3%.

While total imports for the month were slightly under last year, product imports, averaging 974,000 b/d, were up 22.8%. Product imports for the one week ended Jan. 30 averaged 1,054,800 b/d, a new peak.



CRUDE STOCKS

Week ended 1-24	257.9
Previous week	260.1
Year ago	276.9

GASOLINE

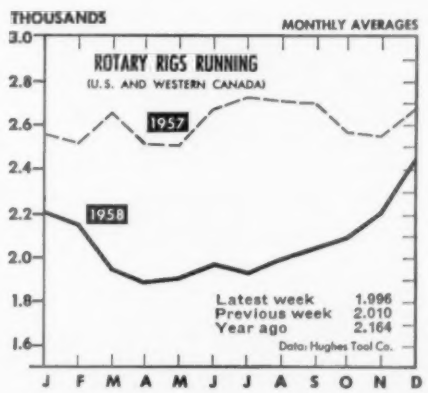
Latest week	197.5
Previous week	192.6
Year ago	204.6

DISTILLATES

Latest week	117.7
Previous week	121.8
Year ago	146.3

RESIDUAL

Latest week	57.9
Previous week	59.9
Year ago	57.5



The Market Trend

It's a Bull Market for Gulf Coast No. 2

Gulf Coast distillate prices this week are just about as strong as they were at the height of the Suez Crisis. Buyers from up north could be caught in an ugly squeeze, for prices in consumer areas probably won't budge.

Last week, No. 2 fuel prices at the Gulf again headed upward, to 9.875¢ a gal. Prompt heating oil is virtually unobtainable. Buying has been active because of the weather and strike threats. If the pressure to bring out offerings continues, prices possibly could jump another 0.5¢.

When a product gets this strong, it's increasingly difficult to get a straight report from anybody. The buyers don't want to say how hard they have looked for product. The sellers are kicking themselves because they let it go too cheaply. The refiners who might be able to fill out a cargo say they can't find anything anywhere. The refiners who might have to go into the market and buy say prices are out of all reason.

This week, for the first time, refiners apparently have been able to palm off surplus gasoline along with distillate. Give them one or two more strikes, they say, and the gasoline market this spring might look quite good. Shell's strike at Wood River is cutting into supplies of gasoline in the Upper Midwest. And Gulf's strike at Port Arthur has slimmed up inventories in the Southwest.

The strength in Gulf Coast distillates has helped firm up prices in many other areas. Two cargoes of Mexican gas oil were sold into the U. S., a rather unusual trade. Venezuelan refiners have very little kerosine and No. 2 fuel for prompt sale, and are turning down inquiries from the U. S. In Italy, some refiners are getting calls for product that otherwise might be supplied from the Caribbean. On the U. S. West Coast prices for distillate meeting East Coast specifications are up to 8.75¢ a gal., up 0.75¢ in the past month.

The only flaw in the picture is the feast-or-famine psychology of many refiners. When things are going up, some refiners want them way up. But, as one buyer put it, "Wait until April." Distillates won't be nearly so popular then. And prices may come down just as fast as they have gone up.

Discounts on Arabian Crude:

Discounts broke out on f.o.b. prices for Persian Gulf crudes last week. Two sellers of Arabian crude offered 10¢ allowances to buyers in Japan.

The allowances were pressured, a Standard-Vacuum spokesman said, because Japan's quota system on foreign exchange inclines refiners to buy lower-gravity crudes than Arabian.

The big problem: Can the discount be limited to buyers in Japan?

Light Resid Is Increased:

Light residual prices were increased in the East last week. Esso Standard hiked its No. 4 and No. 5 fuel oil prices generally 10¢ along the seaboard. New York tank car prices were advanced to $3.46 and $2.97, respectively.

Steel Mill Demand Up:

Low-sulfur bunker "C" fuel prices may be in for increases, too. At the Gulf, one refiner advanced 10¢, to $2.35 a bbl. Demand was stronger, the refiner said, along with increased operating rates for steel.

The Market Place AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of February 2

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U. S. Gulf Coast, cargoes
- Gasoline, 98 oct prem....11.75-12.75
- Gasoline, 92 oct reg....10.5-11.5
- **Kerosine....10.375†**
- **Heating oil, No. 2....9.875†**
- **Gas oil, 48-52 d.i....10.125†**
- Fuel oil, bunker "C"....$2.00-2.10

Caribbean, cargoes
- Avgas, Grade 100/130....16
- Gasoline, 93 oct research prem....10.75
- Gasoline, 87 oct research reg....9.875
- Gasoline, 79 oct research....9.125
- Gasoline, 70-72 oct motor method....9
- Kerosine....10.375
- Heating oil, No. 2....9.625
- Gas oil, 48-52 d.i....9.875
- Fuel oil, bunker "C"....$2.00

New York Harbor, barges
- Kerosine....11.5
- Heating oil, No. 2....11
- Fuel oil, No. 6....$2.37-2.45

Okla-Group 3, northern shpt., bulk
- Gasoline, 89 oct reg....11.5-12.375
- **Kerosine....11†-11.25**
- **Heating oil, No. 2....10†**
- **Fuel oil, No. 6....$1.90†-2.00†**

Chicago, bulk
- Gasoline, 91 oct reg....11.5
- Heating oil, No. 2....10.5-11.85
- Fuel oil, No. 6 high sulfur....7.65-7.75

Los Angeles, rack
- **Gasoline, 88 oct reg....12.5†-12.6**
- Diesel fuel, PS 200....10-11.25
- Light fuel, PS 300....$2.80
- Heavy fuel, PS 400....$2.15-2.35

Natural Gasoline, Grade 26-70
- FOB Group 3....4.5
- FOB Breckenridge, Tex....4

LP-Gas
- Propane, Oklahoma (Group 3)....5.5

Pennsylvania Lubes
- Bright stock, 25 p.t....22
- 200 vis. neutral, 25 p.t....21

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent, 95 v.i....23-24
- Neutral, solvent, 200-210 vis....19.5-20.5

Gulf Coast Lubes
- Bright stock, solvent, 95 v.i....24
- Neutral, solvent, 200 vis....20.5

Eastern Hemisphere

Singapore (Pulau Bukom), cargoes
- Avgas, grade 100/130....17.25
- Gasoline, 79 oct research....10
- Kerosine....10.75
- Gas oil, 48 d. i. minimum....10.5

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, 36.0-36.9....$2.77-3.07
- North Dakota, 36.0-36.9....2.62-2.87
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9....3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9....2.92-3.22
  - West Texas, sweet, 36.0-36.9....3.00-3.07
  - West Texas, N. M., inter., 36.0-36.9....2.93-3.00
  - West Texas, N. M., sour, 32.0-32.9....2.71-2.86
  - East Texas, flat....3.25
  - Mirando, 28.0-28.9....3.31
- Illinois Basin, flat....3.00
- Pennsylvania Grade, Bradford dist., flat....4.05
- California, Signal Hill, 21.0-21.9....2.50†
- North Louisiana-Arkansas, 36.0-36.9....2.77-3.02
- Wyoming, sweet, 36.0-36.9....2.90-3.00
- Wyoming, sour, 32.0-32.9....2.71

Canada (flat prices, at the well)
- Acheson-Stony Plain (Alta.)....$2.61
- Leduc-Woodbend (Alta.)....2.67
- Redwater (Alta.)....2.56
- Daly (Man.)....2.39
- Smiley (Sask.)....2.33

Venezuela (Cargoes, FOB lifting port designated)
- Cumarebo, 48.0-48.9, Tucupido....$3.66
- San Joaquin, 41.0-41.9, Puerto la Cruz....3.25
- Oficina, 35.0-35.9, Puerto la Cruz....3.05
- Tia Juana, Medium, 26.0-26.9, Amuay....2.55
- Bachaquero, flat, Las Piedras....1.78-1.93
- Tarra, 38.0-38.9, San Lorenzo....3.08
- Lagunillas Heavy, flat, Cardon....2.10

†Differential per deg. of grav. varies.

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura....$2.08
- Safaniya, 27.0-27.9, Ras Tanura....1.65
- Iran, 34.0-34.9, Bandar Mashur....2.04
- Iran, 34.0-34.9, Abadan....1.99
- Iraq, 35.0-35.9, Fao....1.98
- Kuwait, 31.0-31.9, Mina-al-Ahmadi....1.85
- Qatar, 41.0-41.9, Umm Said....2.23
- Neutral Zone, Burgham, 23.5-24.4, Mina Saud....1.61
- N. Zone, Eocene-Ratawi, 20.5-21.4, Mina Saud....1.43

Middle East, Eastern Mediterranean
- Arabian, 36.0-36.9, Sidon....$2.49
- Iraqi, 36.0-36.9, Tripoli, Banias....2.49

Far East, Cargoes, FOB Lutong, Sarawak
- Seria Light, 37-38....$2.75

KEY TANKER RATES

(Last paid, per long ton, single voyage)

- **U.S. Gulf-New York, clean (USMC + 12½%) $3.21↓**
- **U.S. Gulf-New York, dirty (USMC + 17½%) $3.35↑**
- **NWI-USNH, dirty....(USMC —57½%) $1.15↓**
- NWI-UK/Cont., dirty....(Scale —42½%) 18/8*
- Per. Gulf-UK/Cont., dirty....(Scale —52½%) 29/4*
- Persian Gulf-USNH, dirty....(USMC —70%) $3.81

**Sterling.*

Survey of Oil Companies on Dealer Selection

	Company A	Company B	Company C	Company D	Company E
What is the most important qualification that a prospective service station lessee can have?	"Potential"	"Character"	"Can meet the public"	"Wants to work hard"	"Attitude of service toward the public"
What is the principal cause of lessee failure?	"Inexperience"	"Couldn't follow through"	"Lack of hard work"	"Inexperience"	"Didn't anticipate shortcomings"
What kind of personal background do you look for?	"Integrity"	"Wife with favorable attitude"	"Salesman's personality"	"Participation in community affairs"	"Good appearance"
What kind of educational and business background should a lessee have?	"HS diploma and selling experience"	"HS diploma and selling experience"	"Literate and can sell"	"HS diploma and factory or selling experience"	"HS diploma and can sell"

Suppliers Want Dealers with 'Sell'

Retail experience is still considered the most valuable background a prospective service-station lessee can have.

A recent spot survey by PETROLEUM WEEK indicates that oil companies want men who know that retailing requires long hours and constant contact with the public.

"If a prospect doesn't realize that customer service is probably the biggest part of his job, this company doesn't want him," says one marketing executive.

Most of the sales executives agree that, to run a service station well, a dealer must have the same qualities that make any other businessman a success. That is, good business horse sense, desire to do a good job, and the ability to work well with people.

Most companies agree that an entire marketing operation is undermined when an inadequate lessee is placed at a service-station outlet.

"It does this company no good at all to put $100,000 into the selection of a site and the building of a station, if the dealer who takes the station can't make it do the kind of business that the investment justifies," says one marketing executive.

A sales manager of another company told PETROLEUM WEEK that his company would rather close a station than to have to keep a dealer on who wasn't making money and was driving customers away to other suppliers' stations because of poor service and business mismanagement.

With not enough good men to go around, oil companies are spending considerable time and money studying what causes a service station lessee to succeed or to fail.

Lack of drive is the prime factor in lessee failure, according to the survey.

When ambition is lacking, a dealer doesn't make an attempt to learn the skills necessary for running a service station.

Usually he won't keep accurate books and records, the station will be untidy, and he won't attempt to use proven methods of salesmanship with his customers.

The survey also indicates that general inexperience in business is another frequent cause of failure.

"Sometimes it just takes too long for a new dealer to learn business sense," says a sales manager, "and by that time it can be too late."

"Many times a prospect will feel that he can operate a station with ease," another sales manager told PETROLEUM WEEK. "But when he gets into it, he finds the job is bigger than he bargained for. And very often he is the man that wants to blame it all on the company."

Surprisingly, service-station experience itself is not generally considered the best kind of background for a lessee.

A typical comment: "A man who has been an attendant at someone else's station for more than a few years doesn't have enough drive to be successful on his own."

This opinion isn't unanimous, though. One marketing executive feels that part-time experience in a station is a great advantage to a prospective lessee. His company particularly favors prospects with full-time experience as delivery men, with responsibility of handling a route.

"Delivery men are used to the problems of collections, and to being polite to people when it seems virtually impossible to do so," says an executive of that company.

One supplier has quite a few successful dealers who were formerly employed at factory jobs. It feels that the men are successful because they were not afraid of hard work.

Several companies will do most of the financing for a new dealer if they think his qualifications promise a successful operation.

"This company will help a good prospect with everything but the cash in the till," says a sales manager of one company, "Where else can a man get a chance to go into his own business with that small an initial investment?"

Another sales manager, however, says his company would prefer an investment of from $4,000 to $5,000 from a prospect, because "it makes

him feel more responsible for the success of the operation."

"We like a prospect to bear 25% of the cost of opening the station," reports another executive. "Sometimes $3,000 to $4,000 will do, but the actual figure depends on the station the prospect is being considered for."

High school graduates tend to be more successful dealers than dealers with either more or less education.

One oil company study of its dealers indicates that there is a definite correlation between the amount of schooling a dealer has had and his success. The study shows that men with less than four years of high school are not as successful as those with a high school diploma. But dealers who are college graduates are also less successful than dealers with only high school diplomas.

Some companies don't feel that a service station business is rewarding enough for a college graduate.

"College graduates, these days, want to be president of the company," observes one sales executive.

But again there's no unanimity. Another company spokesman told PETROLEUM WEEK that the college graduates they have are doing a good job, and, "We wish the company could interest more."

A man's age and physical condition are also given careful consideration by oil companies when selecting a dealer.

Men in the 25 to 35 age group tend to be considered better prospects, although a few companies say they are not that interested in chronological age.

"This company will take a young man if he is mature enough, and an older man if he is active enough," an executive told PETROLEUM WEEK.

The outdoor type is preferred by just about all oil companies. And they especially like someone who is also active in community sports, so that he has a reputation for being "a good Joe."

Oil companies prefer married men, although none consider it an absolute necessity.

Many district salesmen like to sit down and talk with a prospect's wife before the company definitely decides whether or not her husband gets a station.

"Nothing can ruin a man's chances quite as quickly as a nagging wife," says one sales manager.

Another sales manager told PETROLEUM WEEK that he likes to see a dealer's wife interested in the business. Her interest usually means a neater station, better books, and fewer complaints about the long hours.

What's New / IN MARKETING

Enforcement of fair-trading in Pennsylvania—listless in recent months—is showing signs of strengthening.

Several major suppliers that are currently fair-trading have asked injunctions against their dealers who are selling gasoline below stipulated minimums.

Atlantic Refining Co. and Sinclair Refining Co. are two of the suppliers that have taken such action.

Until now, some fair-trading suppliers have admitted privately that they were going easy with enforcement because not all suppliers in the state were fair-trading.

But during the last month, the last two big holdouts, Gulf Oil Corp. and Sun Oil Co., have joined eight other companies in fair-trading.

•

The state government and two city councils in Wyoming are attempting to control trading stamps.

A bill introduced into the state legislature would permit a merchant to issue coupons only if they were redeemable for merchandise or a prize at the merchant's own store.

In addition, District Judge T. C. Daniels has denied the request of two trading stamp companies to declare unconstitutional a Casper city ordinance banning trading stamps.

Daniels said he "has doubts" about the constitutionality of the ordinance, but that he was satisfied that business "would be better off without trading stamps."

A similar ordinance is awaiting final approval in Worland, Wyo.

•

Pure Oil Co.'s gasoline has been chosen as the official gasoline for the Daytona (Fla.) Safety and Performance Trails sponsored by the National Assn. for Stock Car Auto Racing, to be held later this month.

Station Is Background at Sales Meeting

Two complete service stations were installed in hotel ballrooms at New Orleans and Dallas as background for The Texas Co.'s sales organization, while it viewed a nationwide closed-circuit television sales meeting. The meeting was telecast from New York to sales people convened at central points throughout the country, to see a presentation of Texaco's marketing and advertising plans.

The stations were erected in the hotels in eight hours by their manufacturer, the Avoncraft Division of Avondale Marine Ways, Inc. Avoncraft's objective was to provide Texaco personnel with an opportunity to see a porcelain-enamel "package" station, and to illustrate the speed with which such stations can be erected. Normal erection time for a station of this type is five to ten days, Avoncraft says.

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Tulsa 3 — J. A. Hartley, 909 Enterprise Bldg., 522 South Boston, Gibson 7-5594

England, London E. C. 4 — E. E. Schirmer, McGraw-Hill Co., Ltd., 95 Farrington St.

DEPT/Service & Equipment Companies

JOE SAFFORD has been named vice-president and general manager of Hardy-Griffin Engineering Corp., Houston, a division of Atlas Pipe, Inc. He has been Hardy-Griffin's general manager and sales manager for the past year. Before that, he was sales engineer for Mannesmann Tube Co., Ltd., Ontario. **Hal D. Hughes** has been named head of Hardy-Griffin's new sales and service office in Farmington, N. M. Hughes, with ten years' experience in oil field sales and service, joined Hardy-Griffin recently.

J. Safford

C. H. Woodhouse

CHARLES H. WOODHOUSE is the new assistant treasurer and manager of corporate insurance for Armco Steel Corp., with headquarters in Middletown, Ohio. He was formerly insurance manager for National Supply Co., Armco subsidiary, in Pittsburgh. **Wade W. Wentzel**, formerly assistant insurance manager, succeeds Woodhouse as manager.

DONALD A. ELERT has been named sales manager of Milwaukee Valve Co., subsidiary of Controls Co. of America. Elert, formerly vice-president in charge of sales for Rundle-Spence Mfg. Co., Milwaukee, joined Milwaukee Valve in December, 1958. The company manufactures brass, bronze, and aluminum valves, and accessories, for the oil distributing field.

JAMES H. DEGNAN has been named manager of oil country tubular products, **JAMES P. BACON** manager of tubing specialties products, and **GEORGE O. NATIONS** manager of standard pipe products, for United States Steel Corp.'s National Tube Division, in Pittsburgh. Degnan joined National Tube in 1954, at Tulsa, where he served oil and gas customers throughout the Southwest. In 1955 he moved to Pittsburgh as manager of claims. Bacon, with National Tube since 1939, was formerly in charge of sales of products from the Ellwood Works, Ellwood City, Pa. and the Gary Works, Gary, Ind. Nations started with National Tube in 1939, and was most recently attached to the general sales office at National Tube's Pittsburgh headquarters.

J. DOYLE BAIN has joined Atlas Pipe, Inc., as a salesman, with headquarters at the company's Corpus Christi plant. He was formerly associated with Wilson Supply Co. and W. C. Norris Mfg. Co. Atlas Pipe acts as a distributor for various pipe mills and operates pipe fabricating facilities at Houston and Corpus Christi.

G. D. Duke

B. R. Dixon

B. R. DIXON is the new manager of the Northern division, in Denver, and **G. D. DUKE** is the new manager of the Southern division, in Houston, for Johnston Testers. Dixon was formerly assistant to the president of Johnston Testers, and Duke was assistant manager of field operations. The northern division covers the California, Rocky Mountain, and Kansas-North Texas-Oklahoma areas. The southern division includes the Louisiana-Mississippi, Texas Gulf Coast, and West Texas areas.

BILLY J. HURST has been appointed district superintendent at Morgan City, La., for the Baroid Division of National Lead Co. Hurst, with Baroid since 1950, was most recently a drilling and service supervisor. He succeeds **V. S. Hefley**, who has been appointed sales

Petroleum Industry Advertising

Especially recommended for Northern and Eastern United States manufacturers marketing to the oil industry. Direct or through your advertising agency.

Dan Goodrich, Advertising

731 Meadows Oil Center • Dallas

OIL COUNTRY

representative in New Orleans. **R. C. Briscoe,** formerly store manager, has been appointed sales representative for the West Texas area, in Abilene, Tex.

DAWSON LARY has been promoted from sales engineer to district manager of the New Orleans office of J. B. Beaird Co. Lary, associated with Beaird since 1952, has sold compressor plants and other general products in the Louisiana Gulf Coast area. **N. J. Chamberlain,** formerly general products representative in Houston, wil transfer to New Orleans in a sales capacity.

D. Lary

L. D. Jones

L. D. JONES is Gulf Coast regional manager for Globe Oil Tool Co.'s recently expanded operations in that area. Newly appointed Gulf Coast division managers and their locations are: **Charles C. Jones,** McAllen, Tex.; **Tom Latham,** Corpus Christi; **B. P. McDaniel,** Houston; **Bobbie McDaniel,** Beaumont, Tex.; **Sid Siadous,** Jennings and Lafayette, La.; **Jim Pierce,** Houma and Venice, La.; and **H. J. Reynolds,** Brookhaven, Miss.

DR. COSIMO TORRE has joined M. W. Kellogg Co. as research associate. Torre will be engaged in mechanical development in the company's newly expanded research and development department at the Jersey City laboratory. He was formerly a research professor at Syracuse University.

W. L. PICKENS has been elected to the newly created post of vice-chairman of the board of Preston State Bank, Dallas. Pickens was one of the original founders of the bank, formerly called Highland Park State Bank. He has been vice-president since 1942. He is a director of the Texas Independent Producers & Royalty Owners Assn., and of the Independent Petroleum Assn. of America, and a member of the Mid-Continent Oil & Gas Assn.

W. H. SEYFFERT, JR., has joined Harold Brown Co. as South Texas division sales manager. He will have offices in Corpus Christi, where he formerly owned Technical Services Company.

ROSS A. PFAFF has joined the staff of World-Wide Instruments, Inc., Houston, as head of the newly created mechanical engineering, research, and design department. Prior to his new position, Pfaff was an industrial engineer with a manufacturing firm in Houston. World-Wide designs and manufactures portable gravity meters for petroleum and other mineral exploration.

CLASSIFIED

DISPLAYED RATE

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The rate is $22.20 per inch. Subject to Agency Commission.

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$1.80 a line. Minimum 3 lines. Box numbers count one additional line.

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From U.S. government direct to you. We file your application for you. 2560 acres in each lease. Free information. John L. Donahue, 430—16th Street, Denver 2, Colorado. Phone ALpine 5-1087.

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Headquarters New York, but willing to travel as required in administration of domestic and foreign terminal operation.

If qualified, send resumes in DUPLICATE to:

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1,890,000 Gallons
suitable for
Heating Fuels

Property is located in the rapidly growing vicinity of Poughkeepsie, New York. Three 630,000 gallon Horton type tanks and facilities. Accessible by tug-drawn barges. Ample area for trucks.

NEOTEX CORP.
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Let's Be Realistic on Prices

HIKING THE PRICE OF GASOLINE supposedly could solve nearly everyone's financial problems. The federal and state governments say they can bring their budgets into closer balance by tacking a cent or two or three onto present motor fuel taxes. And a similar line of thought prevails in some quarters within the oil industry. In nearly every branch of the industry, some representatives can cite convincing arguments for adding a cent or even a fraction of a cent to gasoline prices.

No one doubts that higher gasoline prices would help solve many financial problems and improve cost-price relationships—providing, of course, the volume of sales didn't decline appreciably.

But the present nationwide average service-station price of regular-grade gasoline (including all taxes) is 29.5¢ a gal. If everyone added his "needed" increase to the price the motorists pay, it would then look like this:

- Federal taxes would rise.....1.5¢ a gal.
- State taxes would go up an average of.....1.0¢ a gal.
- Service stations would hike margins.....1.0¢ a gal.
- Marketing departments would add.....1.0¢ a gal.
- Independent refiners want at least.....1.0¢ a gal.
- Producers, to obtain a proper price, would need.....1.0¢ a gal.
- Tanker men want at least.....0.5¢ a gal.

Gasoline pump prices then would rise 7¢ a gal., making the nationwide average price for regular grade 36.5¢ a gal., an increase of 23.7% over the present price.

And what about the motorist who has to pay the higher price? Most likely, he would drive less, and gasoline consumption would decline. And certainly the motorists' opinion of the oil industry would also decline.

There Could Be No Import Controls

HAVE PRODUCERS CONSIDERED WHAT MIGHT HAPPEN if they go to Congress for mandatory import controls and lose? If they haven't, they should remember what happened to the gas bill.

They took that fight to Congress to overthrow the Supreme Court decision holding them subject to federal regulation. The ire of the public and other segments of the industry was aroused to such an extent that presidential vetoes resulted.

The same thing can happen on an import control bill. For, there is no doubt but what opponents of such a measure again would arouse the public to oppose it and cause a possible crushing defeat. If this happens, there could be no controls on imports.

An important announcement to the drilling industry--

Drilling Contractors have found they get up to 50% FASTER DRILLING, 25% LONGER BIT LIFE, SUBSTANTIAL DOLLAR SAVINGS with DOWELL'S new drilling agent--POLYDRIL!

A brand-new aid for the rapid settling of solids in clear water drilling is now available from Dowell. The product is Polydril*, an *easy-to-mix, low-cost,* water-soluble, organic polymer. Polydril helps you increase drilling rates and bit life, and lower water and mud costs.

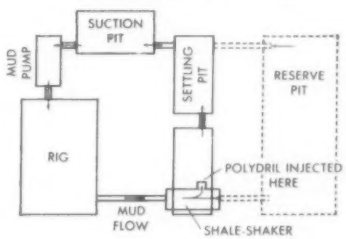
Polydril is, first, a powerful, efficient flocculating agent. But, of special importance, is the fact that Polydril comes to you in a semi-liquid state. This means that it is easy-to-mix, easy-to-use, with no waste or loss. There is no product on the market today quite like Polydril.

POLYDRIL IS EASY-TO-MIX

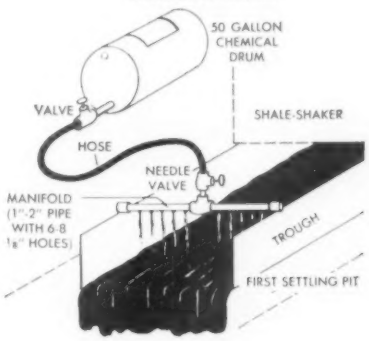
To illustrate the ease with which Polydril can be added to your drilling operation, here are the steps usually followed:

1. Stir the Polydril in the can to a uniform mix just as you would paint.
2. Mix a pint (approximately one-half mud cup or 1 to 1¼ pounds) of Polydril with an equal volume of diesel oil or kerosene.
3. Pour this mixture slowly and uniformly into a stream of water going into a 50-gallon chemical mixing drum. Either fresh water or brine may be used. This makes 50 gallons of treating solution.
4. Inject the treating solution directly into the mud stream between the shale shaker and the first settling pit. Disperse the solution as thoroughly as possible into the stream. A manifold arrangement has been found to be satisfactory for this purpose. (See sketch.) Also, if there is agitation in the mud stream at this point, the Polydril will be better dispersed; and the solids will be flocculated more efficiently.
5. For best results, keep agitation at a minimum through rest of the mud system.

DIAGRAM OF FLOW SYSTEM SHOWING POINT AT WHICH POLYDRIL IS INJECTED



MANIFOLD ARRANGEMENT FOR INJECTION OF POLYDRIL



OTHER USES OF POLYDRIL

Other than as an aid in clear water drilling, Polydril has several additional applications. For example, it can be used:

To help settle mud pits after drilling operations are completed.

To clear muddy water for use as a fracturing fluid.

AVAILABILITY OF POLYDRIL

Polydril is available at all Dowell stations in handy 5-gallon re-usable cans with handles. Each can contains 50 pounds of Polydril.

New as it is, Polydril has already enjoyed wide success in hundreds of wells. The sum of its advantages—faster drilling, reduced rig time, increased bit and pump-liner life, reduced water requirements, mud savings, mixing ease—makes Polydril an important contribution to the progress of oil well drilling. With all these advantages, Polydril is surprisingly inexpensive; and a small amount goes a long way.

Investigate Polydril. For detailed information and prompt service, call any of the 165 Dowell offices and stations. In Canada, call Dowell of Canada, Ltd.; in Venezuela, United Oilwell Service. Dowell, Tulsa 1, Oklahoma.

*Dowell Trademark

Products for the oil industry

DOWELL

DIVISION OF THE DOW CHEMICAL COMPANY

EYEING ETHYLENE?

MEET NAPHTHA!

- With the ever increasing demand for ethylene, now is the time for producers to take a long look at naphtha—a raw material that is not only practical but rapidly becoming more and more plentiful.
- Kellogg offers an unequalled background in processes and plants for the production of high-purity ethylene directly from naphtha and other liquid petroleum fractions, as well as for the recovery of ethylene.
- Utilizing its unique steam pyrolysis process, Kellogg has engineered and built nine ethylene-from-naphtha plants for leading chemical manufacturers in various parts of Europe.
- In the U.S.A. Kellogg has engineered and built a naphtha cracking plant on the Gulf Coast, and has made several economic studies in this country on naphtha and other liquid feedstocks for ethylene.
- Kellogg welcomes the opportunity to discuss with you in detail the many advantages of its steam pyrolysis process.

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